

FRIDAY, DECEMBER 16.

NEWS OF THE WEEK.

We give below, in a condensed form, the leading i items of the week. These items will be found in detail in their appropriate column

etings Next Week .- Georgia Pacific; New York, New Haven & Hartford.

Elections.—Arkansas & Louisiana, Paul F. Beardsley, General Superintendent.—Baltimore & Ohio, Samuel Spencer,
President.—Baltimore & Philadelphia, William M. Clements, Vice-President.—Buffalo & Southwestern, W. S. Bissel, President.—Mississippi Valley, Hiram R. Steele, President. —Montana, Kansas & Texas, A. L. Tomblin, President.— Schuylkill River East Side, J. B. Washington, President.

Changes and Extensions .- Arizona: Tucson, Globe & Northern is to be built from Tucson to New Mexican line.

—Kansas: Denver, Memphis & Atlantic is extended to Colorado line, - Michigan: Minneapolis, Sault Ste. Marie & Atlantic is completed to Sault Ste, Marie.—Pennsylvania, Lake Shore & Michigan Southern opens Shenango Valley branch.-Wyoming: Cheyenne & Northern will be extended 150 miles.—Wisconsin: Chicago, Milwaukee & will build branch from Mather 14 miles northwest. Chicago, Milwaukee & St. Paul

New Companies Organized.-Allegheny & Kingue obtains charter in Philadelphia.—Chicago, Hinsdale & Southern is incorporated in Illinois.—Ohio Valley Railway & Terminal Co. files articles in Indiana.—San Diego & Old Mission is organized in California.—San Diego & Elsinore files articles in California.—St. Louis, Keokuk & Northwestern is incorporated in Illinois.—St. Paul & Southern files articles in Minnesota.—Chicago, Hannibal & Springfield files articles in Missourie.

Traffic.—Anthracite coal shipments for the week ending Dec. 10 show an increase of 12.0 per cent., as compared with the same period last year; bituminous shipments show an increase of 26.4 per cent. Cotton receipts, interior markets, for the week ending Dec. 9, show an increase of 10.0 per cent., as compared with the corresponding week last year; ship-ments show an increase of 8.7 per cent.; seaport receipts show an increase of 9.2 per cent.; exports an increase of 20.7 per cent.; cotton in sight is greater than at the same date last year by 7.2 per cent.

Earnings.—Ninety-th.ee roads report gross earnings for the month of November; 85 show an increase and 8 a decrease. The total net increase is \$3,618,619, or 15.4 per cent, For the month of October 15 roads report gross and net earnings. The net increase is \$491,043, or 40.6 per cent. For the ten months ending Oct. 31, 15 roads report gross and net earnings, 1 showing a decrease i \$2,727,108, or 41.8 per cent. crease in net. The total net increase is

Contributions.

Automatic Wnistle

COLORADO SPRINGS, Colo., Dec. 8, 1887.

To the Editor of the Railroad Gazette:
Your issue of the 2d inst. contained a description of an automatic whistle. The idea is a very old one, in Barry's Raily find a description of an identical device Appliances. I reinvented it several years ago, and thought I had struck something new, merely verifying the old adage that "there is nothing new under the sun." M. J. BUTLER, M. Am. Sc. C. E.

Centre for Steel Tapes.

SPRINGFIELD, Mass, Dec. 6, 1887. TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of Dec. 2, page 785, you describe a new centre for steel tapes. I purchased one of these tapes, pulled out about 10 ft. of it, attempted to wind and found the tape broken short off close to the cylinder. This centre may be an improvement, but the steel strap which fastens the tape to the centre should be much more flexible than the one I had. returned the tape and purchased one of the reliable Chesterman tapes. You say that the "diameter of the tape case is not materially increased." The diameter of the case for a 50 ft, tape is 23 per cent. greater than the diameter of the case of a Chesterman tape of the same length. What is as important for convenience, the weight is increased 93 per The rapidity in winding and the ease with which the can be opened are great improvements. It is a pity that the tape to which you refer cannot bave these improve and retain the efulness of the convenience and us Chesterman tape.

C. E. ALGER, Division Engineer, B. & A.

Some Words about Safety.

COLUMBUS, O., Dec. 3, 1887.

To the Editor of the Railroad Gazette:

* * Lately it became my duty to lock up and report
upon the scenes at Chatsworth and Kouts. There is no gainsaying that the latter accident was caused absolutely by poor railroading, and that instead of being an accident it was simply a fatal blunder. No such charge could have been sustained in regard to Chatsworth. In each instance, however, one can see that with the possible precautions of of the present day, much of the death and suffering could have been prevented, and it is to be hoped that every hu-mane railroad official would bend his efforts in warding off

a repetition of either. In my visits to the car manufacturing shops I have made particular note of two or three little points to which I wish to call attention. In spite of the reat strides made in the march toward steam heating and electric or gas lighting for cars, the vast majority of railroad vehicles are kept warm by coal stoves and railroad vehicles are kept warm by coal stoves and lighted with lamps. This will continue to be so for some years to come. The question with me is this: Ought not the railroads adopt any simple means entailing only slight, if any, additional expense to mitigate accidents? It is only possible for me to point out a few things that may be done. There are several excellent fireproof paints on the market, any one of which will combustion effectively. Why should not the railroad com-panies use it? To be sure they do use a limited quantity in coating depots and freight houses, but not one that I am able to discover uses this sort of paint for coaches. I am told that it is no more expensive than ordinary paint. Some of the large steamboat owners have adopted it for coating their vessels. But, you tell me, the stove is to give way to the steam pipe. Is not the dangerous oil lamp still left, even in the sleeping cars, which should be the pioneers in safety

On a recent visit to a shop where a Chicago railroad con pany was building a "new design" passenger car, I observed man stuffing the bottom and sides of a car with the shava man stuming the bottom and sades of a car with the state ngs from a planer! This same car is now being equipped with a stove and an oil lamp. In a serious collision is this ot an admirable combination for the most deadly work of I consider it so and inexcusably, when there are so many other deadeners of sound (for such was the mission of the shavings) to be had at trifling expense. Let me ask President Rhodes of the Western Railroad Club if this would not be a good topic for discussion at a future meeting. Asbestos, mineral wool and other indestructible and nonigniting substances answering the same purpose as the shavings, save that they do not assist in the stove and lamp combination, can be had. Even with these precautions each car should be provided with a fire extinguisher. There are scores of these, comparatively inexpensive, but which "get there just the same" in cases of emergency. These ones there just the same "in cases of emergency. These questions come up as we think of Kouts. The lesson of Chats worth is to paint the wooden bridges with fire-proof paint or place upon each the ridiculously cheap but none the less efficient automatic mercurial fire alarm such as is in use daily in nearly every considerable city in America. By this system an alarm would be rung at the two nearest stations ne on each side of the bridge-in time to prevent acci-I understand that an old locomotive engin the West has adapted this scheme to railroad use, it has been proughly tested and approved, and still the enterprising railroads of this country have none of them adopted it. THE PROGRESSIVE WEST.

Mutual Relief Associations

The recent announcement of some changes in the rules of the Relief Fund of the Pennsylvania Railroad has drawn general attention to this institution, now in the secon? year of its operation, of which some detailed information will doubtless interest the readers of the Railroad Gazette.

The Pennsylvania Railroad system includes the main line and branches of the Pennsylvania Railroad proper; the Philadelphia & Erie Railroad; the United Railroads of New Jersey the Northern Central; the Philadelphia, Wilmington & Balti-more; the Baltimore & Potomac; and the two New Jersey companies, the West Jersey and the Camden & Atlantic, in all covering an extent of some 3,700 miles, with a force of ome 3,700 miles, with a force of 57,000 persons on their rolls.

The "Relief Fund" to which the employes of these lines are dmitted, is operated under the joint auspices of these panies, by a department organized under the general title of The Pennsylvania Railroad Voluntary Relief Department Operations began in February, 1886 since which time, Oct. 1, 1887, the benefits paid have amounted to \$362,000. This is made up of payments to "Members of the Fund" dis-abled by accident in the service, or by sickness, and amounts due the beneficiaries of deceased members.

The word "voluntary" in the title emphasizes the fact that there is no requirement that employés shall partici-On the contrary, none are at present admitted to pership until after six months service, and there is an express provision that any member may withdraw on giving

The fund is derived chiefly from monthly contributions in advance, at fixed rates, each payment securing to the contributor, for disablement or death occurring in the month covered by it, the indemnity prescribed in the regulations. There are no assessments on account of special demands on the fund. For the convenience of the contributors, the amounts agreed to be paid for a given month are deducted from the wages on the rolls of the previous month. A member who earns wages in a month is thus sure of being entitled to benefits for disablement or death occurring in the next month, without the inconvenience of making a which he might neglect to do and thus lose his standing in the fund.

The monthly amount to be paid by a member is optional with himself, and is determined by his application for membership at the time of entering the fund. Excepting in certain cases of long service, it cannot, however, be greater than the amount fixed for the class into which the person is en-

titled to enter. This is determined by his usual earnings. There are five classes, the first including those whose u earnings do not exceed \$40 per month. The limits for the second, third and fourth classes are \$60, \$80 and \$100 respectively, and the fifth class is open to those receiving m than \$100 per month.

All grade of employes may join, and in fact the president f the company and the most, if not all, of the general officers

A member of the first class contributes 75 cents per month. This entitles him when sick to 40 cents per day, exclusive of the first six days, and to 50 cents per day when disabled by accident in the company's service. Sundays are included. Sick benefit is payable for 52 weeks and two or more periods of sickness, separated by intervals of less than two weeks, are counted together in naking up the 52 weeks, the six days' deduction being m but once. The full accident benefit is paid for 52 weeks, if the disablement continue so long, and after that half rate until recovery. The amount payable on death from cause, of a member of the first class, is \$250. The contribu tions and benefits of the second class are twice as much as for the first, three times as much for the third, and so on. The highest contribution (for fifth class) is \$3.75, the corresponding benefits being \$2 per day for sickness, \$2.50 per day for accident and \$1,250 for death. The last is the highest amount payable at death for any class. Members may, how-ever, take "additional death benefit" at specified rates, varying according to age. The amount so taken cannot exceed the amount payable at death for the class to which the member belongs. This is illustrated thus: "If a member is in the fourth class, bis death benefit is four times \$250, or \$1,000, and he may take "additional" equal to \$250, \$500, \$750, or \$1,000. If he takes \$1,000, the total payable at \$750, or \$1,000. death, including that of his class, is \$2,000. The like limit for the fifth class is \$2,500, which is the highest am tainable under the present regulations.

During the first six months any employé in the service before the beginning of operations was admitted without regard to age or physical condition. Since that time medi cal examination is required, and no one can enter who is over 45 years of age. Medical men are employed to visit and report on disabled members, and prepare statements from which the amounts payable are determined.

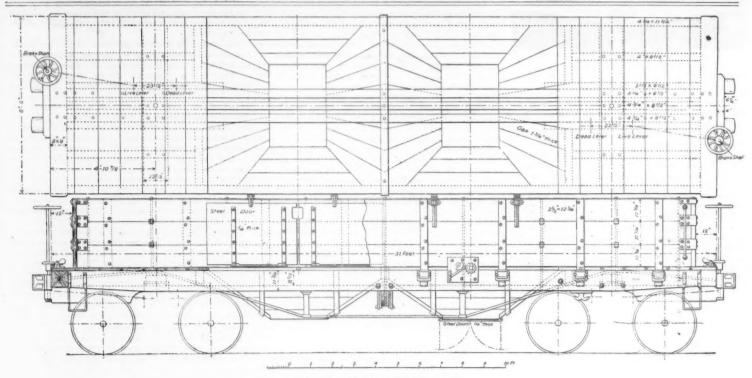
Contributions are not made during disability nor for the remainder of a month not before contributed for, in which recovery occurs. A member who has received sick benefits recovery occurs. A member win has received sick behavior for 52 weeks, and remains disabled, can draw nothing more from the fund. He may, however, retain his title to death benefit by contributing at a specified rate. Should be re-cover and return to duty, he resumes full contribution and title to benefits, excepting that he cannot draw benefits for sickness occurring before he has been at work four weeks.
As a means of relief for those who remain sick after ex hausting their title to benefits in the fund, the railroad company has recently announced that certain allowances will be made to such members, during their continued disability. These are to be based on the class in the fund of the individual concerned and the length and character of his service with the company. They are to be paid entirely by the company, no portion of them coming from the contributions of the the company.

The membership is now about 20,000. There was at first e opposition to the plan, arising apparently from misun-standing. We understand, however, that this is fast disderstanding. appearing as the advantages are shown by the results.

With a single exception, this experiment of the Pennsylvania is the first extensive effort in this country to provide a comprehensive plan of this kind for protecting railway employés against the chief accidents of life by a mutual association. The exception is the Relief Association of the Baltimore & Onio, which has been successfully operated for some years as a chartered corporation. In this, membership is obligatory for those in hazardous employments, for whom the rate of contribution is higher than for those in non hazardous positions.

The Pennsylvania has undertaken the unique plan creating a new general department o, for the management of this fund. of The facilities afforded by the extensive lines and agencies of the associated companies are fully utilized for this purpose, and the road pays all the operating expenses, so that nothing whatever is paid from the contributions of the employés, but the fits to which members become entitled. The combination by this company under a single premium of the great variety of risks pertaining to the different employments, and extend-ing this to include accident, sickness and death is a valuable feature, contributing as it does an important element of simplicity, which is very necessary in an institu-tion dealing with all kinds of men. Employés, especially those of the lower grades who are not prepared to carefully investigate and compare data, not only want to enjoy the benefits conferred by their employer, but it is essential to the fullest confidence and good feeling that they understand the principles which action is based, and are enabled to see to see the asons why certain things are done in a certain way. Complications, concerning age and degree of hazard beclor this necessary simplicity, and the absence of these conditions promotes it. Of course, this desirable result could not be attained except by some strong party, like a great railroad, taking the risk. And this, it should be remembered, is a thing whose value can be estimated but to a limited degree in dollars and cents. The Pennsylvania in thus assuming all the uncertainties of this extensive undertaking really does for en what could otherwise be done only by a fund of money; this together with the expenditure for administration makes a substantial benefit which amounts to a real, though small, increase in pay. Perhaps the most important point of difference between

the two plans referred to is that arising from the entire absof the obligatory feature in that of the Pennylvania. To quire all employes on entering the service to join the fund



DOUBLE HOPPER GONDOLA CAR.

Designed by Mr. J. W. MARDEN, M. C. B. FITCHBURG RAILROAD.

tends to reduce the average age of the membership and consequently the death and sick risks, and therefore the cost arising from those risks, Without the obligatory feature men may fail to avail themselves of the advantages of the plan, from improvidence, general indifference or lack of opportunity to sufficiently] inform themselves, and it is thought by many that these must seriously interfere with success under the "Voluntary" arrangement. The superior attractiveness, however, of this feature to the average mind appears to have led the Pennsylvania to its adoption, the organizers trusting that the substantial features of the institution would enable it to win its way with those most interested.

It is as yet too early to determine how satisfactory the financial results are likely to prove. Thus far there has been a gradual gain, and the surplus over liabilities amounts to a very cansiderable sum. The condition of the fund is to be as-certained at the end of each period of three years, when any deficiency is to be made up by the company, and, if there should be a surplus, it is to be used for a superannuation fund or in some other way for the benefit of contributors.

Experience will doubtless suggest improvements. The information obtained, if properly classified, will give new and formation obtained, if properly classified, will give new and valuable data as to the percentages of sickness and accident among railway men, upon which to base estimates for future operations in these schemes. The valuable aid of the medical men connected with an organization like this, in suggesting improvement of sanitary surroundings, is an important auxiliary advantage, and has commended itself in the more extended experience of the Baltimore & Ohio. The association will also be able to point cut with more accuracy than has been done berefores the out with more accuracy than has been done heretofore, the direction in which efforts for the improvement of appliance $_{\rm S}$ for securing safety should be put forth. The result must be a greater degree of security for health and life, with less sufferng and a reduced cost of providing indemnity for that which cannot be prevented.

The progress of this and like experiments will be viewed with considerable interest by social economists generally as well as by railroad proprietors as efforts on a large scale to promote the welfare of an important part of the people; and these efforts are an evidence of the existence among railroad ' magnates" of a decided interest in the welfare of their men which can hardly fail to promote increased sympathy tween employer and employed.

Double Hopper Gondola Cars, Fitchburg Railroad.

The accompanying illustrations represent some new double hopper gondola cars now being built at the Charlestown car shops of the Fitchburg Railroad, from the designs of Mr. J. W. Marden, Master Car-Builder of that line.

The cars are provided with inner steel doors, which are placed vertically against the sides of the car when the car is being loaded with ore, coal or other material to be discharged by dumping. When, however, ordinary freight is to be carried these steel doors are laid down flat over the openings in the floor, making a flat surface on which any ordinary freight can be carried.

The cars are carried on the Jewett car truck. The cars are of 50,000 lbs. capacity and the weight empty is as fol-

aows.	Lbs.
Body 1	5,660
Two trucks	6,060
0	4 200

The car approximately measures 28 ft. 7 in. long, by 7 ft. dustrial Legislation.

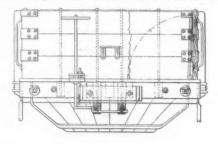
9 in. wide, by 3 ft. 3 in. high inside, and therefore has a Columbia.—Prof. Seligman gives a course of lectures

cubic capacity of 720 cubic ft. level with the tops of the sides

and exclusive of the contents of the hoppers.

Including the latter and allowing the centre of the coal or other material to be heaped up, the total cubic contents of the car would be about 940 cubic ft.

Soft coal, as loaded on a car, may generally be a weigh 50 lbs. per cubic foot, and therefore the car illustrated



Double Hopper Gondola Car.

should be capable of containing 36,000 lbs, of soft coal, trimmed level with the top of the sides and ends, and not including the contentsof the hoppers. When allowance is made for the contents of hoppers and the effect of heaping the coal, the capacity would be about 47,000 lbs. The nominal or marked capacity of the car is 50,000 lbs., and both as regards size and strength, the car seems perfectly capable of carrying that weight.

Courses of Instruction in Railroad Economics.

Yale.-Prof. Hadley gives during the first term a course of lectures of two hours a week on "Railroad Administration." scheme is as follows:

1. General characteristics of railroad business; its depment and its present organization.
The Financial Department.—Ownership of railro

property. Proportion of stock and debt. Forms of debt. Means of control of railroad property for interests other than those of the investors. Construction compenies and other sub-sidiary corporations. Reorganization and receiverships.

3. Construction and Operation.—General history of nethods employed. Characteristics of different countries. Location as affected by probable traffic. How far improveents should be charged to capital. Proportion of different items of expense. Fixed charges and movement exper

Reconomy in train loads in organization.
4. Traffic Department.—History of railroad rates. Principles actually adopted by railroad managers. Classification. Long distance and competitive traffic. Rebates and personal discriminations.

Questions of public policy involved. Impossibility of attempting to base rates on cost of service without checking the development of railroad facilities. The abuse of the power of charging what the traffic will bear cannot be tolerated. But, on the other hand, excessive regulation injures the community more than it benefits it. Brief history of railroad legislation in different states. The Inter-state Commerce law. Interpretation adopted by the Commission.

Its unquestionable advantages and its possible dangers.

Questions of railroad legislation and history are also treated at some length by Mr. Hadley in his course on In

on Railroad Economics, to which allusion has been made in a recent issue of the Railroad Gazette.

Harvard.—No systematic attempt at instruction has yet een made, but lecturers have been from time to time invited to address the students at greater or less length on these Prof. Laughlin is this year devoting som attention to matters of railroad economics in one of his regu-

lar courses of political economy.

More or less systematic instruction on these topics h been offered at the University of Pennsylvania, at the Massachusetts Institute of Technology, and possibly elsewhere. Nor is this movement in university education confined to America. Almost at the same time with the first course of lectures on this subject at Yale in 1883, a similar course was offered in Berlin. From this beginning a system of courses has been developed more comprehensive than anything offered by the universities of the United States. The same movement has extended to Bonn, Breslau and probably other universities in Germany; while at Vienna there are courses of lectures intended more especially for railroad men, but to some extent attended by university students. Books like those of Ulrich, on Railroad Tariffs, or of Schrieber, on Railroad Traffic, are based on courses of this kind. In Paris the matter has not been carried to the same length, but some of the most popular French courses on ad-ministration deal to no slight extent with railroad history and railroad organization.

Licenses for Conductors.

Licenses for Conductors.

The Order of Railway Conductors of America has approved a bill for the licensing of all railroad conductors running trains which do inter-state business, and will endeavor to have it enacted as law by the present Congress. The provisions of the bill are substantially as follows:

Section 1. On and after July 1, 1889, no railroad engaged in inter-state commerce shall employ or permit any person to serve as conductor upon any train or engine while such train or engine is engaged in inter-state transportation, unless such person is licensed as hereinafter provided; and no person shall act or perform any of the duties, etc., or have in his possession any conductor's badge, unless duly licensed.

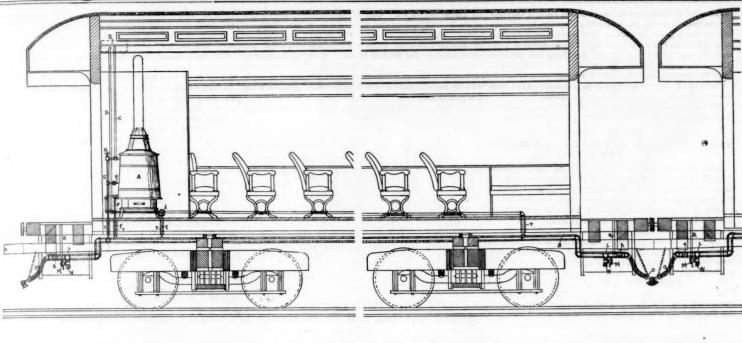
Sec. 2. There si all be a chief examiner appointed by the President, who shall be selected with reference to his fitness and ability to systematize and carry into effect all the provisions of law with reference to licensing, etc., and who shall have had not less than five years' experience as conductor of a railroad train on a surface road in the United States. He shall have a salary of \$3,500 and travelling expenses, and hold office for five years.

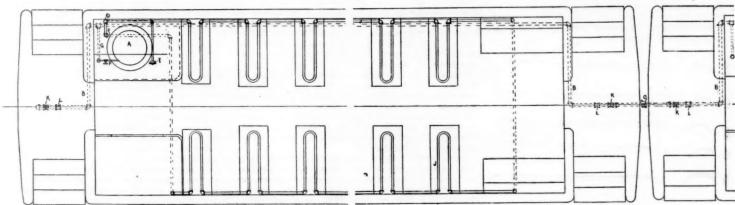
Sec. 3. The chief examiner shall, under the direction of the Secretary of the Treasury, superintend licensing, receive reports from supervising examiners, and generally administer the laws on the subject.

Sec. 4. There shall be .. supervising examiners appointed by the Secretary of the Treasury, selected for knowledge, skill and practical experience, and they must have had five years experience, etc. Salary, \$2,500 and expenses.

Sec. 5. The chief examiner and supervising examiners shall assemble as a national board at Washington annually, and whenever the Secretary of the Treasury shall prescribe. This board shall divide the country into district and assign supervising and district examiners to them.

Sec. 6. Each district shall have two district examiners, constituting a board for the district; each must have had five years experience, be of good ch





General View of Car

THE GOLD SYSTEM ADAPTED TO THE BAKER HEATER.

to applicants after making inquiries as to character and habits of life and carefully examining as to mental and physical qualification and experience. The term of the license shall be for one year, but it may be suspended for bad conduct, unskillfullness, intemperate habits, incapacity, inattention to duties or wilful violation of law.

SEC. 9. The district board shall have power to compel the attendance of witnesses at hearings of complaints, etc., the same as a district court of the United States.

SEC. 10. Conductors must, before receiving a license, make eath that they intend faithful and honest performance of duty.

SEC. 11. provides for a badge. The penalty for neglect in this respect is \$10.

SEC. 12. Qualifications of conductors shall be prescribed by the national board, but no person shall receive a license who has not had at least two years experience as a railroad conductor on a surface steam railroad or as brakeman on a freight train on a surface steam railroad.

SEC. 13 provides for ja fee of \$5 to be paid by the applicant before receiving a license, the fees to go into the government treasury.

SEC. 15 provides for appeal by aggrieved applicants.

SEC. 16 District boards may renew licenses without the licensee being personally present.

SEC. 17. A board must not license a person coming from another district if he has been rejected for unfitness.

SEC. 18 makes it the duty of the supervising examiner to visit all portions of his district, inspect and instruct local boards, see that railroads comply with the law, and visit trains for the purpose of seeing the behavior of conductors. The supervising examiner must, as far as practicable, harmonize differences of opinion existing in different local boards,

monize differences of opinion existing in different local boards.

SEC. 19 provides for an annual report by the supervising examiner, in which, among ether things, must be rehearsed all cases of licenses granted and refused, and all violations of the law, and action taken in relation to the same.

SEC. 20. The national board shall see that district examiners know the names of all persons from whom licenses have been withheld, and all whose licenses have been suspended or revoked.

SEC. 21. If any licensed conductor hinders commerce by unreasonably refusing to serve as authorized by the terms of his license, or who shall fail to give us employer a reason for his refusal, his license shall be revoked.

SEC. 22 provides for bonds to be given by the examiners.

SEC. 24 provides for the expenses of the law by appropriating the proceeds of fees received from licenses and from penalties collected for violations of the act.

SEC. 25. Any officer or employ knowingly violating this act shall be liable to \$500 fine.

Per Diem and Mileage Car Service.

The Railway Equipment Guide prints opinions of several Western officials on this subject, some of which are quite interesting.

President W. H. Truesdale, of the Minneapolis & St. Louis, warmly favors the change, and believes that the per diem system, pure and simple, will soo follow. He calls attention

to the difficulties which are sure to be encountered in adjustment of charges on switched cars, and the fine points which will come up in deciding which road has possession of a car when it stands on a joint connection track where it is liable when it stands on a joint connection track where it is made to more or less delay. This delay is generally the fault of the receiving company, but questions concerning the responsibility for it are frequently complicated.

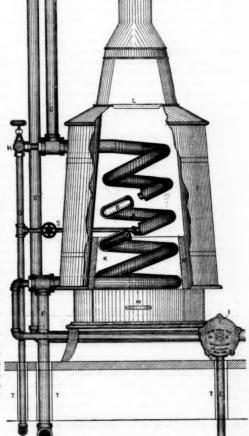
General Superintendent K. H. Wade, of the Wabash, is in

favor of the reform, and says that he has advocated for 10 years the use of a simple per diem system in place of mileage payment. The value to the owner of a car is practically the same, whether the car is in motion or standing on a side track, where it is switched every day and undergoing more injury than it would suffer from ordinary wear and tear in injury than it would suner from ordinary wear and tear in a train. He regards 50 cents as a reasonable minimum charge, and believes that if the railroads would agree upon the amount it could easily be collected from consignees where the responsibility for detention lay with them. Mr Wade calls attention to the injustice resulting under the present system from the practice indulged in by small roads of holding foreign cars for prospective business; the joint mileage and per diem charge, he thinks, will not cure this, because 15 cents a day is too small a sum to have a sufficiently decided effect in hastening the movement of cars. Mr Wade sees no obstacle to suspending the per diem charge as between roads exchanging a large number of cars whenever a dull season renders it unnecessary to hasten the return of foreign cars.

An anonymous general manager, who approves of the change, predicts that all roads will soon be induced to join and that the obstacles which are now apparent will be easily swept aside. He believes one of the chief advantages of the change will be the increased accuracy of car records which will necessarily result, and quotes Mr. Charles Paine's opinion that dilitory consignees can be brought to small charge if only it be rigidly enforced. es can be brought to terms by a very

The Gold System Adapted to the Baker Heater.

This system, which is working on the Pennsylvania vesti-ule trains running between Jersey City and Chicago, is illustrated in the accompanying engravings. It will be seen that it is exceedingly simple. A coil of steam pipe is placed in-side the coil of the Baker heater, consequently when steam from the engine traverses this coil at considerable velocity it side the coil of the Baker heater, consequently when steam from the engine traverses this coil at considerable velocity it imparts heat to the water in the pipes of the Baker system and rapidly heats the car. Either a fire can be built in the heater, as usual, before the engine is attached, and can then be extinguished, or gas or an oil lamp can be used, or steam can be obtained from a stationary boiler. It is proposed, however, to experiment with an oil lamp as being the most



Detail View of Heater.

convenient and generally applicable method of heating the water when steam from the locomotive is not available.

water, and that therefore the movement of the two currents on one another is very rapid, insuring a speedy interchange of heat and a good circulation. The water enters the coil from pipe F and ascends by the pipe C to the overhead tank, and descends again by the pipe D. The large pipe shown in the section underneath the floor of the car communicates with the system on the other side of the car.

The valve S controls an opening in a branch steam pipe for extinguishing the fire when the train starts.

This system is about to be applied to a Wagner vestibutrain running via the New York Central route to Chicago.

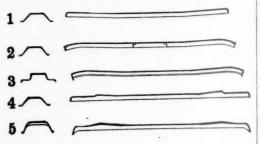
Cost of Maintenance of Track Laid with Metallic

In the Railroad Gazette of Sept. 9, 1887, the improved netallic tie designed by Mr. J. W. Post, of the Dutch State Railroads, was described and illustrated. In an article in the Swiss Bauzeitung, Mr. Post contributes valuable information on the cost of maintenance of track laid with metallic

ties, the result of experience in actual practice.
In 1881 there were laid 4,133 ties of puddled iron weighing S8 lbs. (type 1.) For purposes of comparison as to efficiency and cost of maintenance, one kilometre of road was, in the same year, laid with oak ties. The type of tie was improved in 1882, and they were made to weigh 103.8 lbs. each (type 2). Of these 4,001 were laid, also of puddled iron.

In 1883 the type was changed again to type 3, and 2,086 ties of mild steel, weighing 110 lbs, each, and 2,090 weigh ing 114.4 lbs. each were laid. These latter differed slightly in form from those of 110 lbs., and are classed as type 4.

When later on, pressing between molds was proposed for ties, a new type was adopted, and of this 11,680 were laid in 1884, made of mild steel (system Lichthammer), type 5, weight 95.5 lbs. The general forms of the various types are shown in the illustrations.



All the advantages offered by the foregoing types were combined then in a new type, known as type 6, weighing from 110 to 121 lbs. Of this last type 47,338 were laid in 1884 and 1985 and 50,000 in 1886. Although this last type has given very good results, it was still improved by narrow Although this last type ing and deepening the tie in the middle, as shown in the illustrations in the Railroad Gazette already referred to. Three new types were designed, which are only variations of type

6 and of each other, and show little difference in first cost. Besides these, the same company had laid down in 1865 10,000 ties of Cosijn's system; as these are not included in the statistical results given below, it may be stated here that of these 10,000 there are 9,550 still in use at present, after 22 years of service, while the 450 that have had to be re-placed had as old metal 7 times more value than discarded wood ties; the loss in weight of the iron through rust is only 4 per cent

For reasons of economy it was decided from the start that the cost of metallic ties should not be allowed to exceed that of oak ties more than 25 to 50 per cent. Of all the ties laid since 1881, not a single one has had to be replaced. The system of fastening described in the Railroad Gazette of Sept. 9 was used with types 6 and later forms. The practi-cal results obtained up to Jan. 1, 1887, are given for 21 lengths of road laid with metallic ties. All these lengths are single track. The number of trains per day is 14 on 9 sections, 25 on 11, and 29 trains per day on one section. The ballast is sand cinder and country. The ballast is sand, cinder and gravel. The heaviest engines run weigh 50 tons, and the heaviest load on one axle is 131/4 tons. The maximum speed is 45 miles per hour on

The figures of the table do not include cost for new mate-They have been grouped so as to give the maximum ninimum days of service of all sections laid with the type. The figures for oak ties are for one section; for type 1, 4 sections; type 2, 8 sections; type 3 and 4 (which have been grouped together), 5 sections; type 5, 1 section; type 6, 2 sections. The longest section, 4,320 ft. In regard to the section laid with oak ties, re-spiking was begun in 1886 and continued in 1887, so that the cost of maintenance for 1887 will not be less than for 1886, and all probabilities are that the cost of maintenance per mile per day will increase with the age of the wood. None of the cak ties have needed replacing yet, but this will soon become necessary, which, without counting the cost for the wood, will materially increase the maintenance. Mr. C. Renson. the engineer in charge, who has conducted and supervised the tests, states in his yearly report that a section laid with type 6, can, after three year's operation, be kept in good der on a traffic of 25 trains daily, by 160 day's wages per ile per year. A gang of 4 men working 250 days a year, 50 of which are devoted to other work, can take care of five miles of road and keep it in good condition.

From the detailed table which accompanies the exhaustive

paper of Mr. Post, and which we have much abridged here, no relation can be traced between cost of maintenance and

the grades and curves. Cost of maintenance, however, in all the 21 trial sections does vary nearly as the number of rail-head and a width inward of 6 in. trains. On those lengths over which 25 daily trains are run the average cost of maintenance was 85 per cent. more than where there are but 14 daily trains. So far as the observations have gone the cost of maintenance of the oak ties reached its maximum in the third year and again in the sixth, with the metallic ties the cost was generally greatest in the first year of use.

COST OF LABOR OF MAINTENANCE OF TRACE, IN CENTS PER MILE PER

	Maximum curves. Maximum cent		Numi	Days in ser- vice.		Cost per mile per day.			
TYPE.	num grade. Per	es. Feet	ber of ties	Meximum	Minimum	Maximum	Minimum	Average	
Oak 1 2 3 and 4 5 6	1.2 1.2 1.6 1.6 0.8 1.6	1640 2461 3281 6500 Straight 6560	1120 4133 4001 3078 505 933		1948 1188 1036	29.38 41.76 42 40 4.61	13,66 16 00 8 89	20.42 20.70 26.27 24.90 18.43 3.85	

The Rotary Steam Snow Shovel.

The Rotary Steam Snow Shovel Co. is having built no ess than 10 of its shovels at the Cooke Locomotive Works. Four of them are building for the Northern Pacific, one for the Oregon Railway & Navigation Co., Works. two for the Union Pacific, in addition to one already in possession of that company, one for the Colorado Midland and one for the Southern Pacific. The tenth shovel will be run by the Rotary Steam Snow Shovel Co. between Chicago and the Missouri River, in order to demonstrate to parties interested the facility with which this device will clear a line of snow. It is claimed that, no matter how deep or hard packed the snow, this shovel will cut it at a considerable speed and will throw it out of the cutting clear of the line, either to the right or left, as may be required. By means of an adjustable hood the snow can be thrown either close alongside the track on which the shovel is working, or from 10 to as much as 150 ft, distant.

e first shovel built has been already illustrated in the Railroad Gazette, but since then several improvements have The front of the shovel consists of a rectangular been made. mouth with flaring sides, made of steel plate. This gathers in the snow to a width of about 10 ft., and a corresponding height. Inside this mouth revolves a wheel nearly 9 ft. diameter. This wheel is fitted with two rings of adjustable knives, which cuts the snow in much the same manner as a screw propeller cuts water. As the shovel is driven into the snow bank this wheel feeds itself much as the ordinary screw feeds itself into a piece of wood when driven by a screw driver. When, however, the snow passes the cutters it en-counters a number of radial plates riveted fast to the wheel These plates act like the floats or paddles of a sidewheel steamer, and as the wheel is running at a considerable speed the centrifugal force tends to send the snow out towards the outer curomference of the wheel; but as the wheel is cased in at all points, except at the top, the snow can only escape This point of escape can be regulated of a movable hood, which is worked by there. means of a movable hood, which is worked by a hand wheel from the caboose of the snow shovel. Consequently the snow escapes at this opening in a continuous stream, the velocity of which depends on the speed at which the wheel is running. It can be easily understood that if this wheel is running 200 revolutions a minute the velocity at the periphery exceeds 60 miles an hour, and that a solid stream of snow thrown at that speed will be projected en-tirely clear of the line, and as it can always be thrown to leeward it cannot be blown back on to the track, even when a strong wind is blowing. The wheel is driven by bevel gearing, and a couple of 17×23 steam cylinders, which are placed alongside the locomotive-type boiler. This boiler has 184 2-in, flues and 22,5 sq. ft. of grate area. The boiler and the cylinders and wheel are all mounted on a very strong frame, composed of two 12-in I beams and two 9-in. el bar sills, with suitable cross sills and bracings. This frame rests on two extra-strong diamond trucks. The proportions of the whole running gear may be estimated from the fact that the journals are $5\frac{1}{4}$ in diameter, by $9\frac{1}{4}$ in. long.

This car is followed by a regular locomotive tender, which supplies the boiler with water and coal, as usual. The tender is again followed by an ordinary locomotive, which pushes the shovel up against the snow. The cylinders on the shovels simply revolve the wheel, cutting and throwing the snow to one side. The boiler, cylinders and gearing are all housed in, so as to protect the men from the weather. The engineer stands on one side of the fire-box, and right in front of him, overlooking the knife wheel, is the pilot, who can signal to the engineer by hand or by bell at what speed the rotary wheel should be run.

The pilot also has control of an ice-breaker and a flanger. he ice-breaker is designed to break off the ice from the top of the rail and leave a clean rail for the shovel to run on. It is attached in front of the front wheel of the front truck, so that it cleans the top of the rail before any wheel comes on it is provided with a safety-bolt, which breaks, leaving the other parts uninjured. The flanger is placed behind the rear wheel of the front truck. This cleans out the snow

It will, of course, be seen that the box in front is always ome distance, say, 3 or 4 in., a ove the rail, so that it can some distance, say, 3 or 4 in, a love the rail, so that it can never touch the rail in passing over frogs or low joints, and therefore some device which will closely skim the rails is needed in addition, in order to secure a perfectly clean rail. As diamond trucks are used, the distance from any part of the truck frame to the top of the rail is fixed, and the ice-breaker and flanger can be lowered very close to the rail without any danger of striking it. As they can both be readily lifted, a watchful pilot can always prevent them striking fregs or switches. The method adopted of preventing injury to the ice-breaker, if a switch is accidentally struck. has already been described, and is especially useful in clear-ing station yards of snow, as switches and frogs are, of course, plentiful in such places, and their position cannot always be recollected. The flanger is provided with a similar contrivance, so that if through inattention or carelessness any obstruction is met with, the only part broken can be easily replaced, and the vital parts, which might be difficult to duplicate or to refix in proper position, are left uninjured.

American Society of Mechanical Engineers

The eighth annual meeting of this Society (16 semi-annual)

was held at Philadelphia, commencing at 8 p. m., Nov. 28.

The first session of the meeting was called to order by the President, Mr. Babcock, who read his address.

Prof. John E. Sweet read a paper entitled "A new Principle in Steam Piston Packing." This question was discussed by different members until the time appropriated to this subject had expired. et had expired.

Prof. Webb asked whether the invention could not be de scribed as a solid piston with an arrangement to prevent it from sticking in the cylinder—whether, so far as the working quality is concerned, it is not essentially a solid piston.

Prof. Sweet: Certainly, if the cylinder gets hot. Mr. Wood asked to what use this ring has been put, and whether this device had been tested in practice to any extent to show its merits and demerits.

Mr. Sweet did not like to give his own experience on the thing he had just described, and said that the first one was not made more than two years ago. In an engine of 26-in. cylinders and 36-in. stroke—he could not say how fast running-two pistons were used six months, and the engineer reported that they were as tight at the end of that time a when started. How it would have worked after that he could not say, as the engine was stopped at the end of six months.

Mr. Strong asked Frof. Sweet, or any one else who had ad experience, why cast-iron rings where they were spring in, as they are in ordinary locomotive practice, or Ramsbottom rings, have a tendency to break in service. They were very good as long as they last, but he found that they will very often break and the engine will run for some months before you find it out. You take your cylinder-head off and find your ring in 20 to 30 pieces, sometimes cutting the cylinder to pieces. He was very much interested in the question of finding a good piston-packing that will stay together and last, and thought that perhaps Prof. Sweet's device would overcome this difficulty. He could not account for the difficulty himself, and had not found any one that could. Sometimes a ring would last for a year, and again a dozen would be required in a year. He did not know whether it was the water in the cylinder or the unequal pressure that

caused these rings to go to pieces.

Mr. Barr a-ked if Prof. Sweet had not found sometimes that cylinders that are parallel wear larger in the centre, and how this ring would do in a case of that kind. The elastic ring, of course, would follow the cylinder positions of the piston,

Mr. Oberlin Smith thought that where a ring breaks it is from the same cause that makes other metals break—it has to move too near the elastic limit for that particular piece of metal. Probably good homogeneous cast iron with no flaws lasts longest. Perhaps if rings that do break were proportioned differently, made different in a radial direction, they would not break in the manner referred to. He would like to ask Prof. Sweet in regard to allowing for the wear on the outside of the ring and the cylinder. He took it for granted that he filed away the hook portion when it was worn too loose from the cylinder, so as to allow it to expand a little larger for using after so filing. Prof. Sweet thought that the necessity for this was very

apparent from the fact that there is only the weight of the ring itself. There is nothing to wear but the shoe; there is nothing to wear the ring away. But it is necessary that the cylinder should be parallel, which was the very thing the resent arrangement did not succeed in doing.

Mr. Almond asked if it did not appear that the increased

elocity of the piston would be the cause of the extra wear.

Mr. Parsons replied to the question just put that he had always considered, where a cylinder is worn in the middle, that it was due to pressure in the packing box. The crank at that point would be at right angles to the centre line of the engine, making the greatest angle with the connecting-rod, and the pressure down on the connecting-rod compresses the pirton-rod downward or upward enough to throw the piston

slightly out of line.

Mr. Sinclair thought that if deflection was sufficient to lead to the breakage of a piston ring it would be felt much mo on metallic packing, for instance, and that it would injure the packing so much that it would leak badly before it would

PANEL AND SMOOTHING PLANER.

Made by the EGAN COMPANY, Cincinnati.

the centre would cause the increase of wear at that point, and that the greatest velocity must, of course, be at the centre.

It is, the meeting took up the next subject, and Mr. Oberling and M

Mr. Sinclair could not see this and could hardly agree with the last speaker. Concerning the matter which Mr. Strong spoke of, in regard to the breakage of Ramsbottom piston rings, his experience had been that some roads used these very successfully, and had no reason to complain of the very successfully, and had no reason to complain of the breakage. The breakage was not by any means greater than that of ordinary steam piston rings, and he concluded that the material used had something to do with it. Occasionally the rings were injured in springing them on, and he failed to see any other cause that would lead to the destruction referred to.

ferred to.

Messrs. Woolson and Strong spoke on the same subject.

The President added that it was his experience, in regard to the wearing of the steam cylinders, that it is not a regular thing for steam cylinders to wear larger in the middle. He had known a great many of them to wear larger at the ends and smaller in the middle. At one time when it was fashionable to put in a steam packing (as they called it) in engines which cut off early in the stroke, it was found that the cylinders would wear considerably faster at the ends than at the middle. He had never noticed a cylinder which had worn larger in the middle than it did at the ends, but it was not at all uncommon to find a cylinder small just at the end for a space where the piston does not override the counterbore. If the piston does not come quite to the end of the bore of the a space where the piston does not override the counterbore. If the piston does not come quite to the end of the bore of the cylinder it is very common to find that no smaller than the rest of it, and it leads to the impression that it is worn larger

The next subject brought up related to the topical questions Nos. 50 and 51, namely, "What is the best form of pump to use with driven wells where lift is 10 to 20 ft. and air is likely to get into the suction?" and "Have you used driven wells successfully; of what size and depths, and singly or in groups?" A discussion of this subject by Mr. Briggs was read by the Secretary. These questions furnished text for considerable discussion and elicited remarks from the President and various members. dent and various members.

The second day the meeting was called to order at 10 a. m., and the Secretary read the report of the Council and the report of the Financial Committee. Mr. Towne presented the report of the Library Committee. The present membership was reported as 813.

Mr. Snell read a paper entitled "Experiments and Experiences with Blowers," also a paper entitled "Economical Method of Heating and Ventilating an Office and Warehouse Building." After a somewhat long discussion of this ques-

also call d out a good deal of comment.

The first business of the evening was the reading of a paper by Mr. John J. Grant on "The Milling Machine as a Substitute for the Planer in Machine Construction." This was followed by a paper from Mr. Van Vleck on "Standard Section Lining," which in Mr. Van Vleck's absence was read by Prof Thurston. Prof. Hutton also read a paper on this question. This matter was quite fully discussed various. question. This matter was quite fully discussed, various members taking part.

members taking part.

The following officers were elected: President, Horace See, of Philadelphia: Vice-Presidents, W. S. G. Baker, Baltimore; Henry G. Morris, Philadelphia; C. J. H. Woodbury, Boston: Managers, Stephen W. Baldwin, New York City; Frederick Grinnell, Providence, R. I.; Morris Sellers, Chicago, Nashville was chosen as the place of the next meeting.

Panel and Smoothing Planer.

The accompanying engraving represents a new panel and smoothing planer specially fitted for doing very fine smoothing and planing in all kinds of wood. The feed is powerful in order to permit heavy work being done when occasion requires it, without any danger of stalling or breaking down. The frame is symmetrical, and is cored throughout, and is cast in one piece, and is stiffened with internal ribs and braces in order to make it rigid and not susceptible to vibration.

The cylinder is of steel, double-belted, and carries two

The cylinder is of steel, double-belted, and carries two knives. The lips and chip-breakers are arranged with a view to prevent all tearing out and chipping of stock.

The feed consists of four large rolls, all powerfully geared on an improved principle, the two geared rolls in the bed being larger than the upper ones, in order to prevent all clipping of the ends of boards or gonging in.

The pressure bars are placed on each side of the knife, and made so as to circle to the head, and, it is claimed, are so constructed that no tearing out, even of loose pieces, can take place in working cross-grained panels. The bonnet, with its pressure bar, swings clear out of the

Any further particulars may be obtained of the makers the Egan Co., Cincinnati.

Kansas State Railroad Commission-Annual Report.

An abstract has been published of the annual report of the Kansas State Railroad Commission. The report covers operations of the roads for the fiscal year ending June 30, 1887.

The commission regrets that fuller and more uniform re-ports cannot be had from the companies, and suggests that the Inter-state Commission may bring about a reform in this particular and that the fiscal year of the railroad companies may be made to conform to that of the state and general governments.

panies may be made to conform to that of the state and general governments.

The board has embodied in its report proceedings and decisions of the board in all matters of complaint which seem to possess general interest and value. It has been the experience of the board that many matters which reach its office for correction are the result of mistakes, sometimes of carelessness, on the part of local agents of a railroad company, which are easily corrected by calling the attention to it of the managing officer of the railroad.

The board has inspected the railroad.

The board has inspected the railroad of the state with a view to ascertain their condition and the manner in which they are operated. With a few minor exceptions, they have been kept in good order and condition. All the leading lines in the state are in most excellent condition, and the service upon them is first-class. But it is of opinion that portions of the track of the Neosho division of the Missouri, Kansas & Texas will very soon need attention. It refers especially to those portions of that road lying south of Humboldt and north of Council Grove. These two extreme portions of the those portions of that road lying south of Humboldt and north of Council Grove. These two extreme portions of the road are being operated over the iron rails with which the track was originally laid. These rails are becoming in many places badly worn, and having been subjected to prolonged use cannot be regarded as reliable, especially in hard freezing weather. The central part of the road, between Humboldt and Council Grove, which connects with other roads also operated by the Missouri Pacific Co., and over which the traffic is greater, is in good order and laid in steel. While the board does not think that the operation of the unrenewed portions of that road, with the light traffic and slow trains now operated over them, is attended with The bonnet, with its pressure bar, swings clear out of the way, giving free access to the head for adjusting and whetting the knives, etc.

The table is gibbed in the frame, and raises and lowers in dove-tailed adjustable slides, which can be readily adjusted from the outside to take up any wear.

The capacity of the machine is large. It will plane 26 in. wide and 6 in. thick, and is specially adapted for work in car and railroad shops, and any wood-working establishment.

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economical operation, notwithstanding the great rapidity with which th

ith which they have been constructed.

The mileage of single track in successive years, as reported to the office of the Commission, has been, up to June

1884. 1885. 4,038 4,168 4,574 4,750

think it safe to estimate that by the end of the present year the railroad mileage of Kansas will equal, s not exceed, 8,000 miles. It must be borne in t the mileage officially reported for the year ending June 30 last, did not embrace all the new road actually built up to that date, but only so much as had been fluished and turned over to the operating department of the different companies by whom, or for whom, the same was built. In railroad building the past two years, Kansas has led every other state and territory. Assuming that by the close of the present calender year the total completed mileage of Kansas railroads will equal 8,000 miles, it will be seen that nearly 4,000 miles of this have been built within two years.

The Commission ascribes much of the pres of the state to the great increase in railroad mileage. estate values have in all parts of the state steadily and rapidly advanced, improvements in cities and towns have been of the most substantial character, and on every hand signs of accumulating wealth and enduring prosperity are An additional element of prosperity, rendered prac ticable by the increase of railroad facilities, is being rapidly introduced, namely, the diversification of local industries.

The Commission points to the western part of the state as

being yet insufficiently supplied with railroads.

As a whole the board thinks that the railroad systems of

Kansas are well planned. There has been, however, some improvident and unwise railroad building within the state. It is not wise, neither is it conducive to any permanent or substantial interest, either of the public or of railroads, to construct two or more lines parallel, and so near each other as to divide a local business insufficient for one. The people who from such a conjuncture of affairs expect competition are deluded, and the men who venture their money will gen-

The past year, notwithstanding the falling-off in agricultural production, has witnessed a very considerable growth in railroad business and earnings. This is in a measure due to the immense amount of railroad material for new construc at has been carried over the roads of the state, upon all of which the freight is collected, and charged up to the construction account. The building of water-works and street car lines, which has proceeded in every considerable town of Kansas, has also considerably swollen the volume of These, of course, cannot be depended on as freight traffic. permanent sources of business and railroad revenue.

The results of operation of all the roads reporting, up to

1887	Gross earnings. \$71,694,475 62,768,859	Net earnings. \$31,256,870 30,324,445
Increase	8,925,616	932,425
The net loss of roads not ear	ning expenses wa	AS:
1887	*************	\$114 133 104,318
1887 1886	******** *** *****	Tons. 21,293,833 16,436,575
Increase	***********	4,857,256

Of this increase in tonuage, 4,300,604 tons is due to or this increase in tonoage, 4,300,604 tons is due to increased demand and consumption of manufactures, lumber, the various classes of building material, coal and merchandise and other articles; and but 556,658 tons due to increase of tonnage of grain, agricultural products, flour and meal, and animals. In respect to the classes of freight last named, the tonnage arried in 1887 fell below that of 1885, by 601,703 tons, he production, carried by the railroads for the year ending June 30, 1885, represented a fair average productive year. With the great increase of population since, and a favorable season, these classes of freight should have vastly increased.

The capital stock and dividends of all roads reporting are

Capital stock.....\$325,482.967284,044,892 \$7,834.134 7,017.093

Auditors' Convention at Chicago.

IAt the convention of accounting officers, held in Chicago last week, as reported in the Railroad Gazette of Dec. 9. the following were the principal roads represented: Atchison, Topeka & Santa Fe; Burlington, Cedar Rapids & Northern; Baltimore & Ohio; Chicago, Burlington & Quincy Cincinnati, New Orleans & Texas Parific; Cleveland, Columbus, Cincinnati & Indianapolis; Cincinnati, Hamilton & Dayton; Chicago & Atlantic; Chicago & Northwestern Chicago, Rock Island & Pacific; Chicago, Milwaukee & St. Paul; Chicago & Alton; Central of New Jersey; Denver & Rio Grande; Delaware & Hudson Canal Co.; Fitchburg; Houston & Texas Central; Illinois Central; Kansas City, Lake Shore & Michigan Southern; Mis souri Pacific; Norfolk & Western; Northern Pacific; Oregon Railway & Navigation Co.; Pennsylvania; St. Louis, & Texas; Southern Pacific; Union Pacific: Wabash Western; Wabash; Western & Atlantic.

the telegraphic report, it will be noticed that junction settlements were regarded as entirely out of the question, and the resolution that it was inexpedient to adopt a line bill, showing the proportions of each road, was rejected by a decided vote. Among the principal speakers at the meeting were Mr. Trumbull, of the Wabash; Mr. Williams, Central of New Jersey, and Mr. Kirkman, Chicago

& Northwestern, Mr. Trumbull brought out the point that through billing is constantly increasing, and that the practice must be continued whether accountants like it or not, as the traffic men are always able to show that business will be lost if local billing and settlements at junction points are continued. Those gentlemen, therefore, who had understood that this meeting would or should take up the question of the desirability of through billing had labored under a misap-

Mr. Kirkman said that the Chicago & Northwestern has 150 joint accounts, settled in all sorts of ways, and requiring from ten days to several months; it would appear that the matter of settlement is dependent upon the disposition of some roads and the financial ne sities of He advocated settlements by forwarded abstracts and the finishing up of all accounts within a month, so that poverty-stricken roads cannot leave out of the account a share of the way-bills under the plea that they had not been received.

The committee which formulated the resolutions, which has been continued for the purpose of looking after the matter of uniform annual reports, which will be required by the Inter-state Commerce Commission, consists of the following: M. Riebenack, Pennsylvania; E. Young, Union Pacific; S. B. Willey, Oregon Railway & Navigation Co.; C. Harvey, Cincinnati, New Orleans & Texas Pacific; E. M. Underhill, Southern Pacific; Morris Trumbull, Wabash; G. G. Warner, Missouri Pacific; W. Randall, Chicago, Burlington & Quincy; E. C. Wright, Southern Pacific; R. H. Hill, Michigan Southern; J. W. Coxe, Norfolk & Western; M. M. Kirkman, Chicago & Northwestern.

New England Railroad Club.

The regular monthly meeting of this club was held on the 4th inst. at the Boston & Albany passenger station, Boston. The subject for discussion was "Continuous Brakes for eight Trains."

The officers of the club were instructed to prepare a circu lar to be submitted to the various railroads of New England. asking them to appoint a representative to meet in national convention for the purpose of selecting a standard coupling for steam connections between passenger cars, such convention to meet at the call of the committee appointed at the November meeting in New York, of which J. W. Cloud is

sion at the January meeting the subject of Frogs and Safety Switches" was selected, and Mr. George of the Boston & Providence, was appointed by Lauder to open the discussion. The Secretary Richards, of the boston of Frontierro, we President Lauder to open the discussion. was instructed to invite roadmasters and switchmen in the cinity to be present and participate in the discus

The question of the evening was then opened by the read-

g of a paper by President Lauder.

Mr. Marden (Fitchburg) thought that anybody who had witnessed the recent tests of the Westinghouse brakes would agree that continuous brakes on our freight trains are a necessity. He also thought that if all freight trains were equipped with the improved Westinghouse freight brake, better time could be made with less danger of accident and one-third of the number of freight cars row in shop for repairs could be kept out His road is now equipping its freight cars with the Westinghouse automatic freight brake, and he hoped by the first of next July to

have 500 or 600 cars so equipped.

Mr. Adams (Boston & Albauy) thought that Mr. Westinginghouse had accomplished a great deal, but there is still more to be done. He would not speak disparagingly of the Westinghouse brake, but thought it would be a long time before all freight cars would be equipped with a contin

Prest. Lauder (Old Colony) agreed with Mr. Marden that accidents would be greatly decreased by the use of the automatic freight brake. In the event of roals not being able to equip all their cars with continuous brakes, he advocates its use on five or ten cars next the engine, would greatly reduce liability of accidents.

Mr. Turner, of the Turner-Beard Automatic Brake Co. agreed with the remarks of the gentlemen preceding him regarding the Westinghouse brake. He thought Mr. Westinghouse deserved all credit accorded him in the introduction of his improved brake, but he thought it unnecessary to use continuous brakes on freight trains, as he claimed the same

efficiency could be reached with independent brakes. Other remarks were made by Mr. Webber, Mr. Shinn, Mr. mith and Mr. Sewall.

It was voted to instruct the Secretary to notify the se aries of the New York, Western and Buffaio clubs, also the ecretary of the committee which recently met in New York. of the action taken at this meeting regarding contin ouplings for steam connections.

The Westinghouse Air Brake Company's new triple valve and an engineer's valve were exhibited at the meeting.

Freight Car Coupler-Meeting of the Master Car-Builders' Committee.

The sub committee appointed by the Executive Committee of the Master Car-Builders' Assocation to examine and report on the couplers of the Master Car Builders' type, met report on the couplers of the Master Car Builders' type, met in Washington, Dec. 13. There were present E. B. Wall, Chairman; R. D. Wade, John Lentz, Godfrey W. Rhedes, John W. Cloud, and M. N. Forney, Secretary. The object of the meeting was to determine upon the lines of the Master Car-builders' standard type of automatic car coupler.

Representatives were present from the following vertical plane couplers: Janney, Lorraine, Dowling, Thurmond, Barnes, Timms, Van Dorston, Herrington, Boston Auto-

matic, Fitzgerald & Van Dorn, Hinson, Standard, and the Marchand.

The committee passed the following resolutions

That it be announced to the coupler exhibitors that no application of couplers will be made to cars at this time. Also that the matter of outlines of coupling faces will be considered at an early day and the result announced as soon as it. can be acted upon officially, after due and careful considera-tion. Couplers of the Master Car-Builders' type can then be made to these lines, and railroads will have some certainty in procuring for service such makes of couplers as they prefe with the assurance that they will couple automatically with others of the same type. When these lines are announced others of the same type. When these lines at the length of the draw-head will also be given.

Couplers now on exhibition here can be removed if desired

after Saturday, Dec. 17.

A special committee, consisting of Messrs. Wall, Cloud and Forney, was appointed to adopt standard lines showing the ength of couplers, and instructed to report to ttee. The sub-committee has made such arnd the le the sub-committee. rangements with the representatives of the owners of the Jamey patents in regard to the use of the lines of that coupler as will secure a satisfactory understanding with the railroad companies, through the sub-committee, for the use of those lines, if the committee see fit to adopt them; these arrangements to be fully consummated before the sub-com

mittee makes its report.

The committee made its experiments on a track of 23 in. gauge, and with 24" curve. Each draw-bar was attached to a small truck and the trials made with the Janney attached to the other truck. The trials were all successful, and demonstrated the fact that all represented would couple with the Janney, with the exception of the Marchand, which is a new coupler of the vertical plane type, but different in principle from the Janney type. The Standard ccup-ler was presented in a wooden model, and, although of the Janney type, was not considered by the committee at this time. The Boston Automatic coupler was also not tried, for the reason that they had not time to get castings ready, but there is no doubt that it can couple with the Janney when made according to the new lines to be adopted by th

Before the committee commenced its experiments trials ad taken place to show that all the couplers present coupled with the Lorraine. The committee has invited Messrs. Janney, Lorraine and Benjamin to meet it in New York. and to assist in forming the lines of the composite coupler to be adopted for the standard.

The committee received very valuable information from all the coupler men regarding the form of the proposed standard. The representative of the Lorraine coupler presented committee with a design showing the lines of a perfect vertical plane coupler.

The committee asked one representative of each coupler to appear before it, and explain his coupler and its claims.

JOINT SESSION OF COMMITTEE AND REPRESENTATIVES OF COUPLERS

The meeting called to order by Mr. Wall, Chairman; M. N. Forney, Secretary.

Mr Wall stated for the information of the coupler repre sentatives that they were here to meet the sub-committee of the Executive Committee of the Master Car-Builders' Association for the purpose of establishing a type of coupler to become the official type of the Association. The committee is to state what the type is, so that all may have lines, drawings and templets, and be in the way of making their couplers come within that type. Each representative will be ask come before the committee and explain his coupler and present drawings for examination, and after this examination the committee will examine the full-sized couplers and meet the coupler men later.

RHODES stated that he thought, as the problem of the best lines of a coupler will come up, the coupler men could occupy themselves by discussing the subject of lin s which they would recommend as being the best for the Master Car-Builders' Association to adopt as the M. C. B. type. He thought that would help in coming to a solution of the question, and the committee would get some valuable information on the subject before it adjourned.

Mr. Wall said he would like very much to hear from each f the manufacturers of the couplers.

Mr. SMITH, of the Railway Review, inquired if the lines f the Janney type of coupler were covered by patents.

Mr. Herrick answered for the Herrington coupler that of the Janney type of coupler

was no such claim.

. McConway, for the Janney, said it occurred to him possibly the question was prompted by the fact than state ents have been made that certain lines of the Janney coupler were patented. The Janney patent of 1879 makes a claim which is substantially this: "A hook the faces of which are composed of a knuckle with semi-circles in a reversed position." Any gentleman present can get a copy of the patent and satisfy himself as to what is on record so as to answer the question as to whether our lines are patented; then you have an answer that is a matter of record.

Mr. Wall said that as we had an answer from Mr. Mc Conway on the Janney, we would like to hear from the Lorraine people.

Mr. WALCOTT said : As I stated to the committee, as far as our lines are concerned, we will give the Master Car-Builders' Association the right to use them. As to the ques tion of their being patentable, we are not prepared to take that subject n

p that subject now.

Mr. Thurmond said that the lines of the Thurmond coupler ving vertical as patented do not cover the Janney lines. They are sub-Thurmond, stantially different, and by referring to the patent it will be seen that they do not exactly conform to the Janney lin

Mr. Barnes stated that he claimed nothing on the lines of his coupler, and did not remember that the patent had any claim on the lines

Mr. Van Dorston said the lines of the coupler were constructed as shown. They are not the same as the Janney, but do not interfere with coupling with the Janney as the lines of the mouth are 83½ degrees—while the Janney is 83 degrees. From the face to the knuckle the lines are entirely different

from those of any other coupler here.

Mr. Benjamin, for the Dowling coupler, said we in have made any claims on the lines in so far as the head and knuckle are concerned. We have just as much right to know about lines and be advised of such claim if the Janney people have any. We have never made such claims, but it appears the lines are somewhat different from any other knuckle made. Lines have been made for the purpose of testing the form with the Janney as it was formerly. I understand that the couplers present couple with the Janney. We have come here, all of us, with a coupler that will couple with the Janney. We claim that these claims made by Mr. McConway are absolutely void in law. If you ask if we, in designing a coupler, would use these lines, I think every coupler man present would say no. Is there any possibility of uniformity if you don't take some lines? I don't see how you can ever get uniformity unless you take some definite lines, and expression of opinion as to whether those lines are the best.

Mr. TIMMS said we never have used any lines other than

Mr. Van Dorn claimed nothing for his lines, and if the Association makes certain lines, of course, he will follow

The representative of the Boston coupler, said we don't claim any lines, and are here to get some.

Mr. Hinson said, I make no claim to the lines.

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The Standard Automatic Coupler makes no claim on the

The representative of Carnegie, Phipps & Co. stated that their coupler was not completed and if the lines were satis-factory they would go ahead and finish it, but if they are not allowed to use the lines they might as well quit at once.

Mr. CLOUD said, I will state that the call for this meeting

was for couplers that would couple with the Janney type. was for couplers that would couple with the Janney type, but it does not say they should couple with any particular Janney coupler. If the Janney lines are necessary to perfect the type and are protected by patents, the work of the committee will be blocked for a time. We are here to agree upon something, and while there are various claims here we are after information. We shall meet from time to time till we get lines that will not interfere with the Janney couple or any other.

Mr McConway said, Lunderstood Mr. Cloud to refer to the statement made that the Janney people were a little reticent in certain of their claims. Mr. Chairman, if my icent in certain of their claims. Mr. Chairman, if my answer was misunderstood, I have this to say: It is a phase of the question I had no idea we would be called upon to deal with to-day. Nevertheless I am prepared to deal with it upon the face of the question. The Janney Coupler Co. have certain patents, these patents contain certain claims. The question is whether these claims are valid and so have any legal right. I don't mean to be reticent but simply stated that I referred every one to the patent of 1879. Particularly when face to face with the question, how much are you willing to surrender? I don't believe we are quite ready to discuss that question here to-day.

Mr. Benjamin said: Statements were directly made to me

Mr. BENJAMIN said: Statements were directly made to me by the counsel in Chicago within four days, that they pro posed to stand squarely upon these patents. The question was put to me by the counsel and representative, if we were not infringing and whether we were having a head modified for the Association. The question is merely as to claims. He stands squarely on his lines; and if he can stand fairly on his patents he is justified in doing so and we shall do so, too. The question as to patents is definitely made on the patent of 1879. You may vary these lines and I don't see any possible gain in discussing the question of lines.

Mr. Barnes said: I have been informed, and it is eviden

that no one will interfere with the rights they have, or any of the patents. Of course, this is perfectly right and proper, but I should suppose the Master Car-Builders' Association will not allow a monopoly greater than the Standard Oil Co., or the Western Union Telegraph Co. I think this is what you mean to say to the Janney coupler, Establish

lines that everybody can use. Van Dorston said, couplers to couple with the Janney lin are entirely unnecessary. My coupler will do it and at the same time is built on 83½ degrees. The change will have to be very slight. If this is satisfactory it will settle the ques-

tion. Some further discussion took place and the meeting

TECHNICAL.

Locomotive Building.

The Central Vermont has recently received from the Baldwin Locomotive Works 7 heavy mogul engines for express freight—cylinders, 19×26 in., with 57-in. drivers.

The Boston & Providence has recently added to its motive equipment two passenger engines built by the Rhode Island Locomotive Works.

The Car Shops.

The Indianapolis Car Works in the month of November turned out 466 new cars for the Atchison, Topeka & Santa Fe and the Missouri Pacific, 38 more cars than in any month since the works were established.

A cable dispatch from London announces that the United States Rolling Stock Company has decided to increase its capital stock from \$3,000,000 to \$4,000,000, and to build at Decatur, Ala., a large car works, including a rolling mill

and foundry, and capable of turning out 20 cars a day. The works will employ 1,000 men.

The new foundry of the Litchfield Car Co., at Litchfield, Ill., will be completed during the present month.

The Philadelphia & Reading has ordered 1,100 freight cars from the Harrisburg (Pa.) Car Works.

A project for building car works at Atlanta, Ga., is being energetically pushed by the leading citizens of that place. A committee has been appointed to solicit stock. A large amount has already been subscribed.

The St. Charles Car Co. has, within the last year, begun the manufacture of first-class passenger coaches and has delivered some remarkably fine specimens of such work to Western roads. It is now turning out if type passenger and 300 freight cars per month and has orders on hand to keep the works running full time up to next May. Among the recent orders are large contracts for box cars with the Atchism, Topeka & Santa Fe and the Mexican Central.

The Wassom Manufacturing Co., Brightwood, Mass., has received orders for 20 passenger cars for the Boston & Albany and 6 for the Lebigh Valley; also orders from several other roads.

Bridge Notes.

Bridge Notes.

Bridge Notes.

The contract for the iron and steel work of the superstrucure of the Grand avenue bridge in St. Louis, Mo., has been awarded to the King Iron Bridge & Manufacturing Co., of Cleveland, O., for \$144,000.

Proposals are wanted at Savannah, Ga., until Dec. 22, for rebuilding a bridge and keeping; it in repair for seven years. Address John R. Dillon, Country Commissioners' Clerk.

The Trenton Iron Works, Trenton, N. J., have the contract to build an iron bridge over Blacks Creek, near Bordentown, N. J., for the Mercer County Freeholders.

Armstead & Joiner, of Suffolk, Va., have the contract for several bridges near Suffolk for the Atlantic & Danville R. R. Co.

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The contract for the bridge across Tobesofkee Creek, 8 miles from Macon, Ga., has been awarded to W. W. Heath. D. W. C. Carroll & Co., of Pittsburgh, Pa., are building a half dozen wrought iron bridges for the Central Ohio Division of the Baltimore & Ohio, with iron buildings, girders, etc.; a number of large iron buildings for the Ashland Coal & Iron Co.; eight large steel bo lers with all appliances for the Sailors' and Soldiers' Home, of Sandusky, O.; two batteries of steam boilers complete for the Youngstown, O., Coke & Iron Works.

The Vermont Construction Co., of St. Albans, has recently completed the Hartford bridge on the Central Vermont road, a 56-ft. pony truss on the Burlington & Lamoille and a 60-ft. highway bridge at Grafton, N. H. The company has the following under construction: The New London Northern bridge at Miller's Falls, Mass., 575 ft. over all, having 3 truss spans and 2 girders; a highway bridge across Beacon street, Boston, 175 ft. long, with 24-ft truss; the Clark Bridge, at Williston, Vt., on the Central Vermont road, which will weigh about 500 tons and is 600 ft. long; a 60-ft, plate girder on the Ogdensburg & Lake Champlain road; a 40-ft. highway bridge at Winooski, Vt.; a plate girder at Belchertown, Mass., and a 2 span highway bridge at Sheldon, Vt. They are also building a 52-ft. turntable for the Central Vermont road.

The Boston Bridge Works have been awarded the contract for the new Harvard bridge across the Charles River between Boston and Cambridge.

The Penn Bridge Co. have received the contract to build the bridge across the Oostanaula River at Rome, Ga., the contract for the construction of three bridges at Castle Rock, Wilson Spaulding has been awarded the contract to build a bridge at Pennside, Pa.

L. H. Bushnell has been awarded the contract to build a bridge at Pennside, Pa.

The county commi

The county commissioners will build a bridge at Dayton, O. Address Eugene Shinn.

The county commissioners will build a bridge at Jordan, Dayton county commissioners will build a bridge at Jordan,

Pa.

The county commissioners will build a bridge at Grand Lake, Col. Manufacturing and Business.

The county commissioners will build a bridge at Grand Lake, Col.

Manufacturing and Business.

The Washington Iron Works, of Seattle, Wash. Ter., have just received from the Columbia & Puget Sound Railroad Co. an order for 5.000 additional car wheels.

The Abendroth & Root Manufacturing Co., of New York, have recently closed contracts for their sectional safety boilers with the Edison Illuminating Co., Jersey City Electric Light Co.; Brush Electric Light Co., Louisville, Ky.; Columbus Edison Electric Light Co., Columbus, O., and the Edison Electric Light Co., Columbus, O., and the Edison Electric Light Co., Columbus, O., and the Edison Electric Light and Power Co., St. Paul, Minn.

The Northwestern Modern Car Heating Co. has been incorporated in St. Paul, Minn, with a capital stock of \$1,000,000. The incorporators are T. B. Mills, Millston, Wis.; W. M. Klinefelter, cf St. Paul, and others.

The Pencyd Iron Works, of Philadelphia, have recently placed a s-cond order for Reliance Safety Water Columns, manufactured by the Reliance Gauge Co., of Cleveland, O. Among the recent orders of the Ingersoll Rock Dril Co., of New York, is a complete air compressor plant for operating the Ingersoll power drills at the mines of the Devala-Moyar Gold Mining Company, India. Also for the Zancudo mines, U. S. of Colombia, Central America, a complete plant of duplex air compressor and Ingersoll drills, to be operated by water power, the Ingersoll Company furnishing everything between the water power and the mines.

The Ramel Carbureted Iron Co., of Jersey City, N. J., has been incorporated. Capital stock, \$200,000. Henry A. Jones, Brooklyn, N. Y.; Chas, A. Gardner, Westfield, N. J.; Emile Ramel, John Williams and Edmond Huerster, of New York City, N. Y., incorporators.

There have been built this year at the Urbana, O., shops of the United States Rolling Stock Co., 1,500 freight-cars. Besides this, 11 engines owned by the company have been rebuilt and sold. The remaining rolling stock of the company has also received attention. It

Yard.

The contract for putting the steam heating apparatus in the State Capitol and other buildings at Raleigh, N. C., has been let to the Kelly & Jones Co., of Pittsburgh, Pa., at about \$14,000.

The Dunham Storm Proof Freight Co.'s door has recently been adopted as a standard by the New York, Lake Erie & Western, New York, Pennsylvania & Ohio, Cleveland & Canton, Minnesota & Northwestern, Chicago, St. Paul & Kansas City and the Maine Central. Orders have been re-

with this door.

Iron and Steel.

The Edgar Thomson Steel Works Association has been organized by the employés, and 400 have already joined it, Sick and death benefits will be paid. N. W. Hudson is President.

The Portland Rolling Mill Co., at Portland, Me., is turning out a large quantity of angle iron for the Berlin. Iron Bridge Co., at Berlin, Conn.

The new Bessemer steel plant of the East Chicago Steel Works, at Hammond, Ind., has been started, and has worked successfully. This is said to be the first Bessemer steel ever turned out in the state of Indiana.

Robert E. Masters has been appointed General Superintendent of the Marshall Car Wheel & Foundry Co.'s plant at Marshall, Texas, and in consequence has resigned his position as manager of the cast iron department of the Tredegar Iron Works, in Richmond, Va.

The Tredegar Iron Co., of Richmond, Va., has just completed castings for an order of 700 freight cars.

The Joliet Steel Co., of Joliet, Ill., has posted up notices that the rolling-mill will close Dec. 23 indefinitely.

The Jeffrey Manufacturing Co., of Columbus, O., have among their orders a number for chain belting for Germany and Australia.

A new puddling forge of 15 double furnaces has been erected at the Millvale, Pa., works of Graff, Bennett & Co., but it will not start up before April next.

The Rail Market.

The Rail Market.

Steel Rails.—Sales are reported aggregating 22,000 tons, partly for early delivery, and negotiations are pending for 50,000 tons more, among which is 30,000 tons for a Southern and Southwestern system, and 10,000 for a Northwestern road. The Board of Control reports the sales of rails for for 1888 delivery, up to Dec. 1, amounted to 128,000, out of an allotment of about 848,000. Of these sales, from 60,000 to 65,000 tons are extensions of this year's contracts, so that the new business to Dec. 1 was only between 60,000 and 65,000. Quotations, \$932,6833 for standard sections.

Old Rails.—Only one sale is reported, a lot of 500 tons of American tees at Jersey City.

The Janney Coupler.

The Janney Coapier.

The Cleveland, Columbus, Cincinnati & Indianapolis h
given an order for the Janney coupler for freight cars. It
said, with some authority, that the Janney will be definite
adopted for the Pennsylvania lines west of Pittsburgh.

Contract for Harvard Bridge, Boston.

Contract for Harvard Bridge, Boston.

The contract for building the superstructure of the Harvard Bridge over the Charles River, between Boston and Cambridge, has been awarded to the Boston Bridge Works, for \$161,980, for about 1.725 tons of plate girder work, and 4%c. per pound for girder work, the detail plans of which had not been prepared. Following is a list of bids on the two separate items, made by the different companies:

King Iron Bridge & Manufacturing Co., Clevelaud, O.—Item a, \$153,900; item b, 4½c. per lb.

Keystone Bridge Co., Pittsburgh, Pa.—Item a, \$156,500; item b, 4½c. per lb.

Boston Bridge Works, Boston, Mass.—Item a, \$161,980; item b, 4½ cents per lb.

Cofrode & Saylor, Philadelphia, Pa.—Item a, \$164,000; item b, 4½ cents per lb.

New Jersey Steel & Iron Co., Trenton, N. J.—Item a, \$178,067; item b, 5½c. per lb.

W. G. Coolidge & Co., Chicago, Ill.—Item a, \$179,900; item b, 5½c. per lb.

Edge Moor Iron Co., Wilmington, Del.—Item a, \$179,000; item b, 5½c. per lb.

Berlin Iron Bridge Co., East Berlin, Conn.—Item a, \$183.

item b, 5,100 c. per lb.
Berlin Iron Bridge Co., East Berlin, Conn.—Item a, \$183,item b, 5-760c per lo.

Berlin Iron Bridge Co., East Berlin, Conn.—Item a, \$150,-790; item b, 5-%c. per lb.

Smith Bridge Co., Toledo, O.—Item a, \$190,000; item b, 4-750 cents per lb.

Groton Bridge Co. Groton, N. Y.—Item a, \$189,000; item

b, 5½ cents per lb.
Wrought Iron Bridge Co., Canton—Item a, \$193,026; item b, 5½c. per lb.
Atlantic Works, Boston—Item a, \$198,000.; item b, 5½c. per lb.

Car Heating Notes.

Car Heating Notes.

The Gold system of continuous heating, in connection with the Baker heater, as illustrated in the present issue, is to be applied to one of the Wagner vestibule trains running between New York and Chicago by the New York Central route. It is now running on one of the vestibule trains on the Pennsylvania route.

An electric device for regulating the heat and maintaining an even temperature is in use on the latter train.

The Connecticut River road has just finished a system of pipes in its yard at Springfield, Mass, for conveying steam to cars while standing on side-tracks before being made up into trains. The pipes run under ground and have joint-boxes at frequent intervals where rubber hose can be connected with the pipes of a car. It is proposed to keep the cars which are in regular service constantly warm while standing in the yard, so that they can be washed, swept, etc., at any time.

A system of continuous heating, the invention of W. A. Weinstein, of the American Steam Heating Co., was tried on the Delaware, Lackawanna & Western lately.

The Central Vermont is removing cast-iron stoves and in some instances substituting the improved Baker heater.

The Central Vermont Shops.

The Central Vermont Shops.

The shops of the Central Vermont, at St. Albans, are at present very busy. Mr. W. J. Robertson, the superintendent of motive power, has, during the past few months, made some radical changes, the most important of which is the removal of the extension smoke arch from several engines. The arches are not torn off, but when an engine is rebuilt the arch is not put back again. Mr. Robertson has now in use 16 locomotives which have undergone this change, and he finds that they are doing as well as before, are not burning any more coal, and make time as well. A coarser netting is used. A Fairlie engine for the Canada Atlantic road is being built. The engine has the Walschnert valve gear, and is protably the only machine of its pattern now in use (on any standard gauge road in New England.

The Vermont Construction Co. has recently put in the Central Vermont shops an iron drop table.

Engineers' Club of Philadelphia.

At the meeting of Dec. 3, 1887, Mr. Percy T. Osborne presented an illustrated paper on the Palmetto Railroad, the connecting link in a new line to the South.

Mr. R. B. Osbornefpresented an illustrated paper upon the Unaccountable Deficiency in the Track of American Railways.

Mr. Osborne deprecated the continued use of the unsatisfactory spike; offered a suggestion for a spike-headed holt—partly in accordance with established English practice and partly of his own design—to pass entirely through the tie; stated that this design was in no way patented, and particularly requested full discussion of the subject by the members of the club.

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Published Every Friday, At 73 Broadway, New York.

EDITORIAL ANNOUNCEMENTS.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early coples of notices of meetings, elections, appointments, and especially annual reports, ome notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinons, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of adverting natronage.

The sub-committee of the Master Car-Builders' Association, at its Washington meeting, this week, has materially advanced matters. The conference and open discussion with the representatives of the various designs of the type have placed before all, in a more definite shape, the technical and business obstacles to be overcome before the final form of the Master Car-Builders' type can be settled. The complications which the question of the patents on the lines of the couplers may bring up are suggested in the notes of the joint meeting which appear in our news columns. But it is said that satisfactory arrangements have been made for the use of the Janney lines, should they be adopted.

The interest in technical training has extended itself in Germany to firemen, for whom schools have been established in Hanover, Magdeburg, and more lately in Berlin. The Hanover school has been going for 14 years, and had last year 213 attendants, while the engine tenders school counted 156 pupils. The desirability of such schools was strongly emphasized by the firing trials at Magdeburg early in 1885, in which 11 picked firemen took part, with the result that under precisely the same conditions the best firemen succeeded in evaporating 6.89 lbs. of water per pound of coal, where the worst could only get a duty of 4 lbs. of water for each pound of fuel. If this is the case with picked, though not specially trained firemen, what inferior results must be had with the average laborer who is thought good enough for this It is interesting in the accounts of English agricultural engine trials to note that the heads of great manufacturing houses do not consider it at all infra dig to fire their own engines, and many of them have a well-earned reputation for so handling their machines at these trials as to put their firms in the places of honor, time and time again,

We give elsewhere a short account of university instruction on railroad economy and administration which is given both in America and elsewhere. The growth of these courses is significant. It is not yet five years since the first were given almost simultaneously at Yale and at Berlin. There had of course at an earlier time been special lectures addressed to railroad men; but these are addressed to a wider circle of students, and are significant as showing that the general public begins to take a more intelligent interest in transportation questions. Railroad administration is not a special business to be left to specialists, but it is one which involves so many interests that public ignorance on the subject is a danger. These lectures are attended by three distinct classes of students. In the first place, those who expect to practice law and who feel that with the growing importance of railroad law a knowledge of the principles of railroad business is becoming indispensable. Second, men who expect to go into journalism, who take this as part of a course on political economy, and one which is of extreme practical

importance to them just at present. Third, college graduates who find that railroading as a profession offers attractions to them second to no other, and who also find that if they can learn not to put on any airs about it, their knowledge of political economy in general and of railroad history and economics in particular, stands them in extremely good stead.

Car-load Rates.

The Inter-state Commerce Commission will soon be forced to decide what is a reasonable difference between parcels rates and car-load rates for goods of the same class. This is, on the whole, the most difficult problem which they have been called upon to face. No solution which they can give will be altogether satisfactory. Any decision will involve a compromise between two lines of reasoning, each so different in its premises and methods that it is hard to weigh them against one another.

The shippers claim, with justice, that any arbitrary inequality in favor of car loads constitutes an unreasonable preference, which ought to be stopped. The duty of the railroads as common carriers deprives them of any right to apply the wholesale principle as such. This has been laid down as law by the Commission in Providence Coal Company vs. Providence and Worcester (I. Inter-state Com. Rep., 107). The power of the railroads to build up the large shipper at the expense of the small one is so great, and the indirect effects of such a process so bad, that they must show good cause for any violation of the principles of equal treatment.

On the other hand, the railroads claim with equally good reason that they should not be forced to adopt any system which involves bad railroad economy. This claim is as well grounded as the other. Any violation of the principles of railroad economy reacts severely against the public. The companies further contend that the present system of car-load rates or something like it is under existing circumstances a necessity of good railroad economy. The complainants insist that it is not.

Car-load traffic is relatively economical for the railroads in three ways:

The direct terminal expense is considerably less.
 The proportion of paying to dead weight can be made decidedly larger.

 It is habitually furnished under such conditions that it can be moved with greater ease and regularity.

There is no question that these things justify some difference in treatment. But it is an exceedingly delicate and difficult matter to say how far they justify the existing difference. The first two grounds, of economy which are the most obvious ones, are probably not sufficient; the third point, if admitted by the Commission as bearing on the case, is much more than sufficient. But there is a strong doubt how far it will be admitted,

Taking the railroads of the country as a whole the terminal expenses in the narrower sense, according to the census of 1880, were about ten cents per train mile; while the movement expenses amounted to thirty cents per train mile, without counting repairs of rolling stock. Only a part, and perhaps not a very large part, of this cost of terminal handling would be saved when goods were shipped by car load. This direct difference in economy might justify a difference of ten per cent. in rates, but it would not justify the existing difference of twenty or thirty per cent.

Nor can the difference be justified by the superior economy in time and space when goods are shipped by the car-load. On the east-bound traffic a case may perhaps be made out on this ground. But on the west-bound traffic a portion of the car space will be unused, no matter what be the form of shipment. It is a matter of comparative indifference to the railroads whether they run a train of thirty loaded and ten empty cars, or of forty cars three-quarters loaded. We are informed that, as a matter of fact, many of the west-bound goods which are shipped at car-load rates are not forwarded in full car loads; that an allowance is made to the shipper who furnishes the requisite quantity, but that the railroads dispatch them in half filled cars.

The real reason why railroads make such low carload rates is this: The through traffic, for a variety of reasons, is more economical to handle then the local traffic. Through traffic in bulk is also more subject to competition from other agencies of transportation outside of the immediate control of the railroad associations. It is precisely this traffic which is mainly furnished in car-loads. On the other hand, the local traffic of way stations, which is much less economical, and less subject to foreign competition, is habitually furnished in parcels. Making allowance

for these facts, the car-load traffic, on the whole, is very much cheaper than the parcels traffic, and the present system of differences in charge, while it may not be justified by the saving on any particular shipment, is, from the point of view of the railroad managers, more than justified by the general difference in economy between the two kinds of traffic. The present system may be unjust to the through shipper who sends parcels, or may do more than justice to the local shipper who sends car loads. But, looking at the two kinds of traffic as a whole, there is no general unfairness.

But will the Commission admit this point of view to be a proper one? It is an open and palpable evasion of the short-haul clause. By this clause the railroads are forbidden to give the through traffic certain advantages over the local traffic to or from intermediate points. By the car-load rate system they continue to do it without coming in conflict with the letter of the law in the fourth section.

At first sight it seems highly improbable that this would be allowed, but there are on record utterances on the part of the Commission which give much enouragement to the advocates of the existing system. The most important of these are in Boston & Albany vs. Boston & Lowell (I. Inter-state Com. Rep., 180, and elsewhere). In this case the Commissioners say that no injustice is done to the local traffic by taking through traffic at very low rates, provided by doing so it neither makes the local traffic more expensive nor otherwise incommodes it. And they imply that their decision in that case, forbidding the lower rates for the long-haul traffic, was made on account of the terms of the law and not on account of equity or of what would be for the interest of the parties concerned. Now, the car-load rate case is one in which the practice complained of does not directly violate the terms of the act. The Commissioners, therefore, have room for those considerations of equity which in the Boston & Lowell case were excluded.

Of all the methods of evading the absolute requirements of the short-haul clause this is the least objectionable. It has been found the only means of avoiding underhand favors to large concerns. It has been adopted by the state railroads of Germany and has been carried farther than with us. If the United States government is opposed to the existence of distributing centres as such, car-load rates must be abandoned at whatever cost. But unless we are prepared to carry matters to that point, car-load rates form an element in good railroad economy which does the public less harm than almost any other form of local discrimination, just or unjust.

Railread Extension.

It is an opinion pretty generally held that the railroad building this year will exceed that of 1882, when 11,568 miles was constructed. Naturally opinions differ as to whether the investment has not been more than conditions warrant. It is, however, a reassuring fact that a great proportion of the new road of 1887 is designed and located to develop new business rather than to fight for what exists already, or for retaliation.

All along the Western frontier we see the same phenomenon—the old roads reaching out further and further into young territory, and it is territory of which the contributions to commerce have only beguns In the Northwest, for instance, while it is true that the Montana extension of the Manitoba parallels the Northern Pacific, it is also true that between the two roads lies a belt of country from 70 to 150 miles wide, which will, before many years, support a dense population. In the Southwest the wisdom of extending lines into New Mexico and Arizona is more questionable, but the lines now watching the Indian Territory are in position to take immediate advantage of the opening of that fertile region. Much of the far western building has been, and is, in obedience to the forces which are pushing the centre of gravity steadily in that direction. The Missouri River for a time furnished a convenient and apparently natural stopping place, but the roads which have crossed into the territory beyond can now fix only an arbitrary terminus. Before them is always a field of possible profit, which they must occupy, or their rivals will. In the Southern states the recent great activity has also been something in the nature of an invasion of new territory, and brought about by the development of new conditions; but naturally the limit of profitable building there must be more quickly reached.

of the principles of railroad business is becoming indispensable. Second, men who expect to go into journalism, who take this as part of a course on political economy, and one which is of extreme practical is habitually furnished in parcels. Making allowance quirement for and prosperity of the latter may

be approximately estimated from the bulk of This conclusion is so generally accepted that the conduct of railroad officials in pro viding, beforehand, means and facilities of transportation is governed thereby, and the value of railroad property and securities is advanced or depre in the minds of investors according to the reported bulk and condition of maturing or garnered crops. But while investors are influenced by the reported condition of the crops of a season, railroad officials must be governed by wider considerations. Large and increasing crops are the rule in this country. falling off in bulk for a season is quite certain to be compensated for by an increase in quantity in the succeeding year. Each succeeding decade develops an increase in the average amount, corresponding to the enlarged area of production, and the increase in population. Looking to the results of the past and viewing the spirit of the present, railroad managers go forward with confidence, enlarging and extending the facilities of their lines to meet the approaching demand. The opinion of investors in general, and that of railroad managers and promotors as to the necessity or economy of extended building is often at variance, but whatever the immediate result, the over-building of to-day is found inadequate tomorrow.

Undoubtedly many miles of road are building at the present time which will find out unprofitable employment for a few years to come. But had our roads always waited upon traffic many of what are now trunk lines would have remained unbuilt to the present day. No more pressing demand for the principal roads between Buffalo and the Mississippi River existed at the time of their construction than is presented by the sections of new country now being developed in the West and South.

of efficiency of conductors, the practical value of this measure is very questionable. Quite likely the conductors' association regards this as experimental and will lay no claim to perfection; but before placing such a subject before the National Congress it should be well digested and put in such shape as to present an attractive side to the lawmakers. Numerous points in this document give evidence of too little care in drafting. Further counsel from intelligent and experienced railroad men should have been taken.

If new railroad building is being carried to an unwarranted excess at the present time, the spirit of rashness is infecting the oldest and most conservative managers in the country, for in no former like period have such vast sums been expended in extension of track, permanent improvements, and rolling stock by old lines of road as during the past two years. And still many of the trunk roads, at times, are unequal to the prompt movement of the traffic crowding upon their lines.

Taking the increase in staple crops in the past 10 years as a gauge of railroad requirement, the present activity in construction and improvement is explained if not fully justified. Taking the annual production for a period of five years preceding 1877, and for the five years including 1882-1886 we find the increase in the production of wheat was over 61 per cent., and of corn upwards of 56 per cent. The increase in acreage under cultivation and in the volume of crops has continued steadily for many years, and is likely to go on increasing for many years to come, at least as long as new lands remain to be brought into cultivation and population shall continue to increase at the present rapid rate. It will be observed, however, that the production of crops increases in a larger ratio than the growth in population. In the former period the production of wheat was six and one-half bushels, and of corn 25.2 bushels per capita; and for the period of 1882-6 the production per capita was about eight bushels of wheat and 30.3 bushels of corn.

The demand for increased facilities of transportation, it is believed, grows in a larger ratio than the production of crops in proportion to population. Manufacture and the development of new articles of trade with the increasing output of coal and other minerals come an to make up any difflency that may appear in the increase of agricultural products as compared with new railroad mileage.

But while railroad building is encouraged by the well known facts of the country's growth, and by the common faith in its great undeveloped resources, there are other facts which one would think must retard it in the future. The steady decline in rates, and in profits on the investment, is the most important of these. To go back but five years we find the the percentage of interest and dividends on stock,

bonds and debt, paid by all the railroads of the United States, to have been as follows:

 1882.
 1883.
 1884.
 1885.
 1886.

 3.65
 3.68
 3.52
 3.36

 The earnings in the same years were, in cents:

 Per passenger mile.
 2.514
 2.422
 2.356
 2.198

 Per ton mile.
 1.236
 1.124
 1.037
 1.244

 1.236
 1.124
 1.037
 1.94

The ratio of expenses to earnings has increased somewhat in the same time, but not nearly so much as rates and profits have declined. In other words, capital invested in supplying transportation by rail has got to produce more of the commodity and be content with less interest now than in the past, and that seems to have become a law. Where the down-

ward course of profits will stop cannot be forseen, or how soon the great sums now going into new roads will find more profitable employment elsewhere. It is evident, however, the turn must come. Were this business left to take its course, we might expect a natural and rational adjustment. We might con fidently expect that railroad building would keep close up to the country's needs, and that investors would be content with a small but reasonably sure profit. An element more difficult to allow for is introduced now, however, by the recent legislation, both national and state. The uncertainty as to what Congress and the states will do, the fear of more stringent legislation, the doubt as to the effects of future interpretations of existing laws may, and probably will, make investors more timid about risking money in a business which they can no longer control.

Government Examination of Conductors.

In another column will be found the scheme for government regulation of train conductors which has been drawn up by Mr. W. P. Daniels of the Order of Railway Conductors, and presented by that body to While the ideas embodied in this proposed law are good and in the right direction, and while there is ample room for improvement in the general standard of efficiency of conductors, the practical value of this measure is very questionable. Quite likely the conductors' association regards this as experimental and will lay no claim to perfection; but before placing such a subject before the National Congress it should points in this document give evidence of too little care in drafting. Further counsel from intelligent and experienced railroad men should have been taken. For example, the requirement that certain candidates must have served on a surface road two years is far from being a proper and impartial safeguard. There are any number of surface steam railroads on which the self-training that a conductor gets may be exceedingly poor, while the things learned on a crowded elevated line like those in New York city are not to be despised and should not be wholly excluded, even by implication. There are surface roads on which the trains are few to keep trainmen's wits well brightened, while on the other hand there are reads which are too large to give the men much healthy mental exercise. On a four track road with block signals a conductor might be exceedingly dull and still retain his position for years simply because complications demanding quick decision, coolness or general good judgment are demanding systematically cleared out of his path.

All these considerations, however, are doubtless answered by the statement that the appointing power is relied upon to select the right kind of men; and this brings us to the chief objection to a law of this kind, the mischievous effects of political methods in its administration, and the antagonism to our form of government involved in intrusting such functions to public officers. Comparatively few of the state railroad commissioners are high class railroad experts or such persons as careful railroad directors would choose for administrative officers. Charles Francis Adams said on retiring from the Massachusetts Commission that railroad officers ranked a \$5,000 commissioner on a level with their own subordinate officers; that states must pay better salaries (get better men) if they would have their officials respected by the roads-If this is so, what is to be said of still lower grades? Enginemen, station agents, telegraph operators and switchmen need supervision and inspection as much as conductors, and any law passed ought to make provision for them. The courts have decided that in the matter of police regulation a state may make laws concerning inter-state business; this means, of course, that Congress should not legislate on the same subject; and is not the licensing of conductors in the nature of a police regulation?

While, therefore, there are numerous reasons why Congress should not pass a law of this kind, the idea involved and the motives of those who propose it are worthy of attention. The fact that it is not right for the government to do the railroads' business for them should be an incentive to them to fulfill all their duties with added faithfulness. A conductor or any other employé who is unfit should be either ousted or reformed regardless of any government requirement. If railroads tolerate inefficient trainmen the Order of Railway Conductors and all other good citizens should do what in them lies to educate public opinion up to demanding a higher standard. In the Silver Creek and St. Thomas collisions and other similar cases the juries released the accused individuals for the apparent reason that the

guilt was not definitely located; and yet there was guilt somewhere; and if it could be unmistakably fixed it is more than probable that public opinion, as interpreted by juries and government attorneys.
would demand punishment. The laws are probably stringent enough already, but this does
no good if prosecuting officers cannot see their way clear to apply them. Where a judge can see that a railroad's negligence is clear and unmis takable he approves large verdicts in favor of injured or aggrieved passengers; if railroad officers act ngardless of humanity in their short-sighted aim at financial economy, conductors' associations and all well disposed railroad men have a duty to see that the true facts are known to the courts and legislatures. While the state should not tell the railroads exactly how to do everything it can properly punish them for inefficiency. If an ignorant conductor injures the public or an individual the party at the public or an individual the party at fault can easily be punished if he can be positively pointed out. If the superintendent appointed the conductor without due care he is to blame : if the directors hampered the superintendent by scant appropriations they should be held responsible; if train dispatchers are allowed to make scapegoats of trainmen, guilt could be fixed there. There are cases enough continually coming before the courts and the State Commissioners to furnish plenty of texts for sermons; let the conductors' association preach a few of these from the housetops.

The following comparative statement of the commerce through St. Mary's Falls Canal, Mich., for the seasons of 1886 and 1887, has been sent to us by General Poe:

Year.	Steame	Sail ve	Unresi	Total	Total	Tonn	age.	Разнеа
	78	sgels	stered.	pas-	Registered	Freight.	gers.	
1886 1687	No. 4,584 5,968	No. 2,534 2,562	825	7,424 9,355	No. 3.: 93 4.165	4,219,397 4,897,598	Tons. 4,527,759 5,494,649	
Inc. p. c.	1.384	28	519 170	1,931	572 16	678,201	966,890 21	1,931

It will be seen that the number of steamers passing the locks increased 30 per cent., and the tons of freight carried increased 21 per cent. The traffic through this canal has not quite reached that of the Suez Canal, but at this rate of increase it will take but a year longer. The figures show also an increase in freight tonnage as compared with registered tonnage of vessels, and the greater relative service of the locks. While the lockages increased 16 per cent., the total vessels passed through increased 25 per cent., and the tons of freight increased 21 per cent.

The approximate shipments of Lake Superior ores for this season will amount to about 4,400,000 tons, as against 3,541,966 in 1886, and 2,456,107 in 1885. Of this, up to Nov. 1, Cleveland and Ashtabula both received over 1,000,000, the receipts of Cleveland being increased 10 per cent. Ashtabula gained 80 per cent., while Fairport, which received 430,000, made a gain of over 400 per cent. Over 2,000,000 tons of ore were, according to the Iron Trade Review, hauled to Escanaba, and the Chicago & Northwestern is improving its docks and facilities at that place, so as to enable it to handle 3,000,000 tons the coming season.

The two Gogebic consolidations, the Moore-Benjamin, or the Windom scheme, and the Burton, or the Bessemer Consolidated Irou Co., are still bung up, though it is possible that by squeezing some of the water out of them they may be floated.

A third project, the Great Lakes Steam Shipping Co., which was to some extent dependent on the consolidation schemes, will only build three or four of the 15 ore-carriers they intended to launch by the end of 1888. As the vessel owners are said to have received fully one dollar per ton above a fair compensation for all the ore carried this season, their mability to build the projected 15 vessels is unfortunate for the ore owners, as there is no indication of a decreased output of ore.

It is announced that the Chicago-Council Bluffs roads have agreed on a reduction of the time of through passenger trains, to be begun Dec. 18, though the statements given out are somewhat vague. It is said that the fast through train will leave Chicago at 7:30 p. m. and ran to Council Bluffs in 16 hours. This would allow but a very short time for transfer at Chicago, even in a union station like that of the Lake Shore and Rock Island. The Lake Shore train is due in Chicago at 7:10 p. m. This train, it will be remembered, leaves New York and Boston in the morning, whereas the Pac fic Coast connection heretofore has always been with the trains leaving those points in the evening. If the trains arrive in Council Bluffs at 11:30 a. m., they will be 1½ hours too late for the Union Pacitle train; but the latter, we presume, is to be again changed, though no announcement to that effect has yet been made. This midday train out of Council Bluffs appears, however, to be slower than that which leaves in the evening; so that a general rearrangement would seem to be necessary before the traveler can enjoy the benefit of the fast trains over the

whole of the route between the Atlantic and Pacific. There is no advantage to the through first-class passenger in starting from Council Bluffs at widday, as the limited train starting in the evening would overtake him at Ogden.

The values of the exports of breadstuffs in November and for periods of five months and eleven months, ending Nov 30, are given by the Chief of the Bureau of Statistics,

lows:			
1887 1886		Five months. \$63,360,812 65,215,108	\$148,019 641 135,077,674
Per cent D.	\$3,095,138 24.6	D. \$1,854,296 2.8	I. \$12,941,977 9.2
The exports of wh	eat were, in	bushels:	Fire seenths

40,378,243 43,603,833 The exports of wheat flour, barrels, were: The exports of corn were, bushels:

The average export value the five months was:

orn, per bushel 1887. 'heat, 85.7' lour, per barrel \$4.55

An abstract of the annual report of the Richmond & Alle gheney Railroad will be found in another column. The receiver's report an increase of 4.6 per cent. in the earning from the railroad business, notwithstanding an increase of 15 per cent. in the maintenance expenses. The local traffic and passenger business show improvement, and connection business has gained 16 per cent.

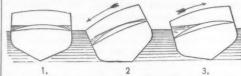
The increased expenditure for maintenance of way has come largely from the fact that very extensive renewals of ties and timber structures have become necessary. Som nges have been made in alignment also, correcting curves and grades and avoiding trestles. Over \$100,000 has been epent in construction, and the item of maintenance of way and buildings was \$150,000 against \$139,300 in 1886, and \$101,000 in 1885. Seventy-seven trestles were filled with earth, 19 were partly filled and those replaced by bridges Thirty-seven of the old canal bridges were also filled, mak ing permanent crossings on earth banks, several of the short bridges have been rebuilt with plate or lattice girders, and a thorough examination of all bridge structures was made by an expert. All are pronounced sufficiently strong for the rolling stock except the Tye River bridge, which is being partly rebuilt by the Keystone Bridge Co., steel being substituted for iron in the weak members. Probably the physical condition of the road is better now than ever before, and while the Reseive and act when any experiment the road is the road is the road in the road is better now than ever before, and while the Receiver: do not make any promises, their moder ate hopefulness for the future seems warranted.

Lord Henniker, the chairman of the "Railway Rates Com mittee," which was formed originally to oppose bills brought into Parliament by the companies to increase their maximum rates and legalize terminal charges, has written to several of the technical papers of England, giving the results of suits brought against the London & Northwestern and Great Western Railway companies; the former for charging 8s. 4d. per ton for carrying undamageable iron 9½ miles, from Bir-mingham to Spring Vale, or at the rate of 21 cents per ton mile, and the Great Western for charging 7s. 4d. for carry. ing the same class of goods 22½ miles. The freight had been paid under protest, and was on suit repaid by the companies into court. It appears that in the first case the legal rate was 3s. (72 cents), and in the case of the Great Western it was

Under the heading "Increased Outlets for Steel" the Lor d Steel Trades Journal calls attention to the increased use of steel frames for freight cars. The principal exportation of rolling stock from England has for a long time been to India, and the building of state railroads in Burmah is opening up another large market. In both of these countries wood is regarded as objectionable in car frames, and iron has for a long time been employed in Indian frames, and iron has for a long time been employed in Indian rolling stock, and now that steel is proving better and cheaper than iron, "heavy capital expenditure is being incurred in buying down new mills by firms who are determined to make a profit, and plants of this character once possessed, may expect a large amount of employment from constructive engineers, as well as railway wagon builders, for sectional steel." A much larger proportion of Bessemer steel is used in England for constructive purposes than here, a state of affairs which would be greatly changed if our a state of affairs which would be greatly changed if our car-builders should use this material for car frames, and the possession of such plants would enable them to compete more readily in foreign markets at the close of our present boom.

The Detroit Dry Dock Co. have lately built a ferry s which is designed to cross the Straits of Mackinac all winter. in connection with the Michigan Central, and will have to work her way through very thick ice. She has two propellers, one forward and one aft, and the forward propeller is expected to dislodge the ice, while the engines working the after propeller, being more powerful, will continue to shove her ahead. She is built with considerable rise of floor, which, it is claimed, will assist her to break the ice. The forward propeller is 10 ft. diameter and the after propeller 12 ft. She carries ten cars, and is built very strongly of oak, with metal sheathing. The forward engine is designed to in licate 1,000 h. p. and the after engine 2,000. She has three boilers of the Scotch type, measuring each 18 ft, by 11 ft, 6 in. She has double smoke-stacks.

She is also provided with what is the only known effective levice for diminishing rolling, which has as yet been only used in a few British iron-clads, but it has been tried on one of the Inman Atlantic steamers. This consists of rolling nks, which extend right across the ship and are partially



filled with water, each tank holding about 30 tons of water. The floor of the tank is curved, being bighest in the centre of the ship. As the ship rolls, the water, of course, all runs to the lower side of the tank, which becomes full just as the

ship has reached her lowest point and is rolling back again.
In the accompanying diagram, fig. 1 represents the ta when the vessel is on an even keel in still water. Fig. 2 shows the vessel at her extreme angle of roll, and shows the water in the tank following the movement of the ship. Fig. 3 shows the vessel recovering from her roll, while the water has all run to the lowest side of the ship, which is now rising own by the arrow heads.

The weight of water is then against her rolling back again because it is on the side of the ship which tends to rise
When that side has risen, the water runs to what is now the lowest side, but by the time the water gets there that side of the ship is rising, and hence the weight of the water is always on the side of the ship which is rising, and therefore her rolling is checked. The principle of this device is that, owing to the curve in the bettom of the tank, the snip rolls quicker than the water can run from side to side. In some experiments tried on one of the Inman stramers, a roll of 17 degrees, which is very uncomfortable, was dimini hed to 3 degrees, which is hardly perceptible. This device will, it is stated, be applied to the new large steamers for the Inman line now building, and will add another no inconsiderable improvement to an Atlantic voyage.

The Cincinnati, Indianapolis, St. Louis & Chicago will adopt the new system of car service settlements on Jan. 1. The New York Central holds off a month longer, the date w announced by that company being Feb. 1, 1888.

The report that the Pennsylvania Railroad were making some experiments with the Sawyer-Mann system of heating and lighting cars by electricity is not correct.

American and Foreign Train Service.

BY ARTHUR T. HADLEY.

In the Railroad Gazette for Nov. 25 attention was called to the fact that the United States enjoyed more train service in proportion to the number of its inhabitants than England. Belgium, France or Germany. In other words, density of traffic in America was greater in proportion to density of nulation

How are we to account for this? To some extent, perhaps, by the difference in relative wealth of the different countries. But this explanation is by no means complete or satisfactory. The wealth of Great Britain and France per head of population is pretty certainly greater than that of the United States. The best available estimates for the year 1880 give an aggregate wealth of about forty-four thousand million dollars each for the United States and Great Britain and about forty ne thousand million dollars for France. not account for the difference

Nor will the average length of haul furnish any satisfactory explanation. Belgium, which has the smallest territory and greatest density of population, stands precisely at the middle of the list. The United States and Germany, with he most scattered population, stand at opposite extremes. On the whole, as we compare different parts of the sam country the tendency is for the more concentrated population to have the greater amount of train service. The loss in length of line is more than counterbalanced by the gain in number of trains. But this, so far from furnishing a reason for the pre-eminence of the United States, only makes it al the more surprising.

There is one solution, and one only, which explains exactly the order of the statistics of train service. The more a government tries to base rates on any preconceived schedule, the less railroad service the country gets. This is clearly seen from the following table, where we have indicated, side by side, the proportion of train mileage to population, and the extent to which the companies have based rates upon "what the traffic will bear?" We have omitted Holland altogether, the enormous amount of water transportation in that the order of the statistics of train service. The more a gov the enormous amount of water transportation in that country, as well as the complications of international transit traffic, rendering the figures unavailable for comparison That is not an argument for or against special rates.

vils of discrimination as it has been practiced in America are too serious for anybody to think of palliating them. We are simply occupied with a plain statement of facts and the lessons to be drawn from them. If we wish to check discrimination intelligently, it is of the utmost importance to understand precisely what results we may expect.

understand precisely what results we may expect.

The lesson of these figures is, those countries which allowed their railroads to charge what the traffic would bear, obtained the utmost amount of railroad service possible; while those which were only willing to pay for their railroads under a preconceived schedule were forced to content themselves with a smaller amount of railroad service. If we in America were willing to put up with as little railroad service as Germany has, we could have adopted the original Reagan bill of 1879; and, conversely, had we adopted the original results of the mutual interchange of ideas and experience among

COUNTRY.	Annual train mileage per thousand inhabitants	System of rates.
United States	9,700	Classification based on value. Much discrimination, both local and personal.
Great Britain	7,504	Same principles as in the United States but not carried to quite the same extent.
Belgium	4,499	Extremely elaborate value classification. Fourteen classes. Sliding scale tariff. Special rates avoided
France	3,558	Four classes. Equal mileage rates for the three highest; sliding scale for the lowest. A considerable number of special rates.
Germany	3,258	Value classification avoided as far as possible. Equal mileage rates with but slight exceptions. Special rates frequent, but apparently not deviating widely from tariff rates in most cases.
	United States Great Britain Belgium France	COUNTRY. land er train mile United States 9,700 Great Britain 7,504 Belgium 4,499 France 3,558

agan bill of 1879, and systematically enforced it year after year, we should probably have had to put up with very much less railroad service than we now enjoy. This has been the practical reason which prevented the more extreme attempts at railroad regulation from being successfully carried out. Our shippers desired low rates, but the shippers and the whole country still more imperatively desired extension of railroad facilities, and they were thus unable to enforce any legislation which very seriously interfered with the derelopment of those facilities.

The Inter-state Commerce Commissioners remark in their report that the short-haul clause affords little or no inconvenience to those corporations which pass through a rich country and which are powerful enough to be more or less inde-pendent of outside circumstances in making their rates. The results which we have grouped in tabular form are but a further development of this same general fact. If the short-baul principle is to be applied, the rich corporation in the populous country is the one that feels it least. it is known in advance that the short-haul principle is to be applied, the rich corporation in the populous country is the only one which will build the railroad. A new meas ure of regulation, if not very severe, may temporarily be applied at the expense of the railroads, and particularly of the weaker railroads. But its ultimate effect if continued will be to prevent weaker railroads from being built to places which would otherwise have the benefit of their service and to lessen the extension of facilities on existing

The final effect on railroad profits is slight in any event On the whole, stringent regulation, if systematically applied from the outset, tends to make the average profits on railroad investments a little higher, because none but the most profit able lines are built and none but the most profitable service undertaken. Freed from the fear of competition of weaker lines the stronger companies, whether owned by corporations or by the state, have a virtual monopoly. The advocates of state ownership talk of the advantage to the community of having its lines owned by an authority which will do unprof itable work for the benefit of the people as a whole. But with the train service per head of population in Germany But one-third that of the United States, it follows of necessity that some interests, whether profitable or unprofitable, are seriously neglected.

ro sum up, a country may make whatever restriction it pleases upon the way in which the railroads shall be allowed to collect pay from the shippers. If these are lax the country can have a great deal of railroad service; if they are stringent it can have comparatively little. In either event it has what it can pay for. The rate of profit in railroad investments will not be seriously changed by any such action of the government. Capital will come in and be invested in giving the country railroad facilities just as long as that line of business is likely to pay. The effect of restrictive legislation will be that the amount of such investments per head of population will be less than it would be otherwise. Equal mileage rates in Germany and France bave brought the train mileage of those countries to a very low figure. Classification and sliding scale tariff rates in Belgium have allowed it to go higher. Special rates in England and the United States have stimulated it, perhaps, to an abnormal height. Laxity of legislation will not increase railroad profits very much in the long run, nor will stringency of regulation, except for the time, dimnish them. Railroad facilities will expand to consume the profit or will contract to avoid the loss. It is by this expansion or contraction that the matter finds its final adjustment. them

TECHNICAL:

members, and the "improvement and education of members and the elevation of the trade." The constitution adopted provides for active members, honorary members (who must be interested in the business as owners) and social members, who are retired foundrymen. The next meeting will be held in Worcester. These officers were elected: President, Isaac Winchester, of the Magee Furnace Co., of Chelsea, Mass.; Vice-Presidents, J. S. Barton, of Norwich, Conn.; Frank Davey, of Bristol, Conn.; Secretary, J. P. Pero, of Stamford, Conn.; Treasurer, Frank Gibby, of Boston; Councillors, R. A. Palmer, of Providence; Joseph Hennessey, of Chicopee Falls, Mass.; John B. Bero, of Indian Orchard, Mass., and R. A. Richardson, of Rutland, Vt.; Managers, J. C. Murlless, of Rockville, Conn., and John Witherell, of Florence, Mass.

Electric Train Signal.

Electric Train Signal.

Electric Train Signal.

The Boston & Maine Railroad Company have equipped a train on the South Reading branch with push buttons in each car and an electric substitute for the bell-cord. The coupling is described as consisting of a hard rubber casing, with interlocking metallic flanges, inside of which the entire mechanism is located. In the centre of each coupler is a catch (backed by a stout spring) which unites with a similar catch on another coupler. On each side of this catch is a phosphor bronze sliding rod, and when the two parts of the coupler are brought together, the rods in each come in contact, and the circuit is completed. The electricity is generated in a battery placed in the engine cab, but the Acme Railway Appliance Company, which owns the coupler patent, also claims to hold the exclusive right to generate its electric power by a dynamo operated by steam from the locomotive.

The Williames' Car-Heating System.

The Williames' Car-Heating System.

Mr. R. G. Chase, proprietor of this system, is equipping 10 engines and from 40 to 50 cars on the Pennsylvania road; 12 cars and 2 engines on the Chicago, Burlington & Quincy, and 8 cars and 2 engines on the New York, Lake Erie & Western. The trains on he Central Vermont road, which were furnished with this system last winter, will also be in use the present winter. In addition to the foregoing, Mr. Chase has contracts to put his system on the Chicago & Northwestern, and other roads.

Turner-Beard Automatic Brake

Turner-Beard Automatic Brake.

A train of 25 cars equipped with this buffer brake made a number of exhibition stops near Aliston, on the Boston & Albany Railroad, Dec. 13, in the presence of about 100 railroad officers and others interested in the subject. Seven successful stops were made, although there were broken several of the chains on the windlass attached to the friction wheel which derives its motion from a collar on the axles. Figures are given, in the report which reaches us, of only one of the stops: 600 ft. on a 80-ft. grade at 23 miles an hour.

International Convention and Exhibition of 1888 at Brussels.

at Brussels.

Armstrong, Kuauer & Co., 822 and 824 Broadway, are the authorized agents of this convention and exhibition for the United States, and will receive applications for space. All applications for space from the United States must be filed before Jan. 15, 1888. All entries must be made before April 15 next and be in proper ord r by April 25. Messrs. Armstrong, Knauer & Co. state that all American exhibitors will be personally represented through them, and their exhibits carefully looked after and orders forwarded. From them further information can be had.

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Avalanche Sheds on the Canadian Pacific.

Snow sheds of peculiar construction are used on mountain sections of the Canadian Pacific. As they are designed to protect the line against avalanches rather than ordinary falls of snow, these sheds are very massively constructed. The violence of these avalanches was observed during the construction of the line. Since then a single avalanche has covered the track for a distance of 1,300 ft. and a depth of 50 ft. In order to render possible the overation of the line, some 4½ miles of snow sheds have been built at the spots most subject to avalanches. The longest shed is 3,700 ft. long. A crib filled with stones is placed on the high side of the cut and a timber trestle is erected on the opposite side. Strong timber beams, 4 ft. apart, are laid from the top of the crib work to the top of the trestle at an angle representing the slope of the mountain as nearly as possible. These are covered over with 4-in, planking, and the beams are braced on either side from the trestle and from the crib. The covering gives 21 ft. headway from the under side of the beams to the centre of the track.

A New Cable Company.

and perior avalanches. The longest shed is 3,700° ft. long. A crib filled with stochast place for the high side of the beams of the stochast o

posts of this oak outlast those made of white oak, partly, probably, because the timber is peekd. One reliable report states that tan-bark oak posts were found to be sound after twelve years, while those of white oak in the same construction had to be replaced several years sooner. Reports from railroad companies where this wood is used for ties give their life as from 5 to 10 years, while the reports for white oak give from 3 to 12 years. In the average, all the oaks which are known as "white oaks," named below, last between 7 and 8 years in the roadbed.

That the oaks of this class may be used for railroad construction interchangeably, and do not offer any appreciable differences in the qualities most essential for a good railroad tie, the following table, compiled from the Census Report, may serve to show. The column of specific gravity will allow an estimate in regard to adhesion of spikes, while the column of indentation allows an estimate as to resistance to cutting of rail. The position as to quality, in comparison with the other kinds mentioned, is indicated by numbers in parenthesis.

	Range.	Weight per cu.	Specific grav-	Resistance to indentation	Elasticity	Transverse strength
White oak. (Quercus alba, L)	East of the Rocky Mount ins.	46.35	0.7470 (4)	3,388 (6)	97,089 (2)	905 (4)
Chestnut or rock chestnut onk. (Quercus prinus, L.)	Northeastern and in Ken- tucky, Tennes- see and Alabama.	46.73	0.7499 (3)	3,688 (å)	125,473 (1)	1,031 (2)
Basket or cow oak. (Quercus Mich- auxii, Nutt.)	Southeastern.	50.10	0 8039 (2)	3,725 (4)	96,373 (3)	1,118 (1)
Buir, mossy- cup, or over-cup oak. (Quercus mac- rocarpa, Michx)	Northern U. S.	46.45	0 7453 (6)	3,730 (3)	92,999 (4)	982 (3)
Post or fron oak. (Quereus obtusiloba, Mich.c.)	East of Rocky Mountains.	.2.14	0.8367	4,415 (1)	83,257 (5)	872 (6)
California white oak. (Quercus Gar- ryana, Dougl.)		46.45	0.7453 (5)	3,846	81,109 (6)	879 (5)

From these figures it would seem, that contrary to the accepted notion, the white oak, par excellence, is inferior in all particulars to the chestnut oak, and in general not superior to any of the others.

The American Meeting of the British Iron & Steel Institute.

The council of this Inscitute have decided to hold the next autumn meeting, probably in September, in the United States. Mr. Adamson, the President, Sir Lowthian Bell, Mr. Carbutt, Mr. Snelus, Mr. Gilchrist, with other Englisb, and a large proportion of the Continental members, have signified their intention t. attend. Mr. J. S. Jeans, the Secretary, has issued a circular to the members saying that 250 members of the Institute have a cepted the invitation to be pre ent at the meeting and requesting an early notification of the recipients' intention. This will be the first meeting of an English scientific society in the United States, and it is to be hoped th at the members will come prepared to extend their travels beyond Pittsburgh.

To Move a Hotel by Rail.

Superintendent J. L. Morrow, of the Brooklyn & Brighton

To Move a Hotel by Rail.

Superintendent J. L. Morrow, of the Brooklyn & Brighton Beach, has contracted with the Iron Car Co., of New York, for 100 tube iron cars of 30 tons capacity, all new and specially built and tested, to be used in moving Hotel Brighton, Coney Island. The hotel now stands over the sea. Tracks will be built on piling, the iron cars placed on the tracks and the hotel building blocked up on the cars. All the cars will be tied together, and all pulled back by engines until the hotel has been moved 500 ft. from the sea. It will require about 1½ miles of track to move the building 150 ft. The hotel is 460 ft. long, about 150 ft, wide and three stories high with five towers.

with the exception of the Warsaw, Vienna and Warsaw-Bromberg, on which it is of the 4 ft. 8½ in. standard. In Sweden about four-fifths of the whole length are of the 4ft. 8½ in. gauge, while for the balance six different and smaller gauges have found adoption. Norway has about two-fifths of her total mileage laid with 4 ft. 9 in. gauge, and the other three-fifths with 3 ft. 6 in. gauge.

Asia.—In British India about two-thirds of the total mileage are laid with the 5 ft. 6 in. gauge and the balance in five different gauges, varying from 2 to 4 ft., the longer mileage being represented by the 3 ft. 3½ in. gauge. On the Island of Ceylon it is 5 ft. 6 in. The Russian Trans-Caucassian railways have adopted the Rusian standard, 5 ft. On the Island of Java 3 ft. 6 in. gauge is adopted on about four-fifths and 4 ft. 8½ in. on the balance of the total mileage. In Japan the 3 ft. 6 in. gauge has been adopted on all lines with one single exception.

Africa.—In Egypt the gauge is 4 ft. 8½ in.; in Algeria and Tunis it is the same, with the exception of about 150 miles, on which it is 3 ft. 7½ in. In the English Cape Colonies the government railways have generally adopted the 3 ft. 6 in. gauge.

Australia.—The gauge varies in the different colonies. It is 4 ft. 8½ in. in New South Wales; 5 ft. 3 in. in Victoria, and 5 ft. 3 in. and 3 ft. 6 in. in South Australia. This last gauge is also found in the other colonies.

Of the total length of railroads in the world about 74 per cent. is standard gauge; 12 per cent. wider gauge, and 14 per cent. Emaller gauge.

RAILROAD LAW-NOTES OF DECISIONS.

Powers, Liabilities and Regulation of Railroads.

RAILROAD LAW-NOTES OF DECISIONS.

Powers, Liabilities and Regulation of Railroads.

Two cases—one in Minnesota, the other in Ohio—as to discrimination by railroads in favor of large shippers are of imtance, especially the latter one. In Minnesota the United States Circuit Court decides that a contract by which a railroad company agrees to charge a rate of not less than \$2.40 per ton to all persons shipping less than 100,000 tons of coal per annum over its road, and to make a rate of \$1.60 per ton to all shippers shipping 100,000 tons or over, is void; the discrimination being so gross as to be contrary to public pohey.¹ In Ohio the Standard Oil Co. having, threatend to store its oil until it could lay a line of pipes to Marietta, unless the Receiver of a railroad company should give it a special oil rate and agree to carry its oil at 10 cents per barrel, to charge rival shippers 35 cents per barrel, and to pay 25 cents per barrel of the sum collected from rival shippers to the Standard Oil Co. The Receiver, before acceding to this, submitted it to his lawyer in New York, who advised him to go abead and make the agreement, as it would be to the interest of the road to have the immens to the Receiver consented. But one Rice, who had a small refinery at Marietta, and who was one of the competitors which the monopoly wished to crush, went to the United States Court and complained that he was certainly a ruiued man if he had to pay 250 per cent. more for the carriage of his oil than his competitor. Fortunately he found a judge with backbone, who proceeded to make short work of the contract, Receiver and all. "The discrimination complained of, but we forbear. The Receiver will be removed. The matter will be referred to a master to ascertain and report the amount that has been as aforesaid unlawfully exacted by the Receiver from Rice has been paid to the Standard Oil Company, and, if so, how much, to the end that, if any such payments have been made, suit may be instraited for its recovery." In the payments have been

blown down by a cyclone. The Federal Court holds that it is liable for one-third of the amount expended in putting it in repair, notwithstanding the fact that the injury to the bridge was from an act of God. 11

The Supreme Court of Nebraska decides that a proposition submitted to the voters of a county, in which it is proposed to vote the bonds of such county to a railroad company, must designate the donee. A propolition in the alternative, to issue to a certain corporation named or to another designated corporation, is ineffectual to authorize the issuing of bonds, even if adopted by the legal voters. Bonds sense by a county as a donation to a railroad company are invalid, unless they have indersed thereon a certificate signed by the Secretary and Auditor of State, showing that they were issued pursuant to law.

as a donation to a railroad company are invalid, unless they have indorsed thereon a certificate signed by the Secretary and Anditor of State, showing that they were issued pursuant to law. 2

In Tennessee a railroad was authorized by its charter "to do all lawful acts incident to a corporation and necessary and proper to the transactin of the business for which it is incorporated." Its charter also declared that it should "possess such additional powers as may be convenient for the due and successful execution of the powers granted in this charter." As an inducement for a subscription to its stock by an elevator corporation, the railroad company attempted to guaranty an 8 per cent. dividend on the elevator stock. The Supreme Court holds this ultra vires and void. 13

The Federal Court in Nebraska holds that it was the intention of Congress by the act of July 1, 1862 (12 St. U. S. 491), giving a right of way to the Union Pacific Railroad Company, to grant such right of way through those lands which by surveys should be found to be sections 16 and 36, the school sections which it intended to give to the future state of Nebraska, pursuant to the provisions of the organic act of 1854 (10 St. U. S. 283), creating the territory of Nebraska. 14

In Pennsylvania the Supreme Court decides that the public works of a railroad corporation, used as such, with their necessary appurtenances are not, in the absence of legislation specially imposing such liability, liable to taxation as real estate under the general laws of the state. 19

In New York, the Court of Appeals rules that the meaning of "length of the main track or tracks on road," is the length of the main track or tracks on road, in section 13 of chapter 353 of laws of 1882, providing that the expenses, etc., of the board of railroad commissioners shall in proportion to the length of the main track or tracks on road, "is the length of the road between its terminal points (including branches and auxiliary lines) and not the quantity or number of miles of rail laid.

sew errsy by the act of that state of March 30, 1898. The supreme Court holds that, under the provisions of that act, the elevator is not subject to assessment for municipal purposes, 17

Injuries to Passengere, Employes and Strangers. In Pennsylvania the Supreme Court rules that where a passenger leaving a railroad train at his destination crowds through outbound passengers who have been admitted to the patform and door of the car, and, indiag upon reaching the steps that the train has started jumps of the steps that the train has started jumps of the steps that the train has started jumps of the steps that the train has started jumps of the steps that the train has started jumps of the steps that the train has started jumps of the steps that the train has started jumps of the starting the train, and whether the plaintiff was guilty of contributory negligence in immping from the steps. 11

In Tennes ee, a young iocomotive engineer, earning \$4 per day, of industricus and sober habits, and with an expectation of life of 31 years, was killed by his engine, being thrown from the track by reason of a defect in the road, at a sharp and dangerous curve on the side of a mountain. In an action by his administrator against the railroad company, to recover damages for his death, the evidence showed that the company had been notified that the road was defective, and had failed to put it in safe condition, and had sent deceased out on an engine that was out of repair and liable to jump the track, and it did not show that deceased was guilty of contributory negligence. The jury rendered a verdict against the company for \$8,000, which the trial judge refused to set aside, although in the order refusing a new trial declared that he considered it excessive. The Supreme Court also affirms the verdict. 12

In the United States Circuit Court in Louisiana the well settled rule as to "fellow-servants" is applied to render a railroad not liable for any juny to a brakeman caused by the negligence of the engineer. 20

In Maryland the

t pany, and such wife and child did not release the railroad to company but sued it and obtained damages by compromise, the mother (the beneficiary) could not recover the insurance from the Relief Association, 32 and the company to recover damages for causing the death of one who was picked up on a crossing on a dark night in November, having been struck apparently by defendant's train, which had passed a few minutes before. The principal with, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that, ness for plaintiff testified to living near the crossing; that he heard no bell or other signal; that he went of the crossing the death of one that the close of the crossing it is that he heard no bell or other signal; that he went of the crossing it is that he heard no bell or other signal; that he went of the crossing it is that he heard no bell or other signal; that he went of the crossing it is that he heard no bell or other signal; that he heard no bell or other signal; that he went of the crossing it is that he heard no bell or other signal; that he went of the crossing it is the crossing in the open country, cuarded by gates on the crossing in the open country, cuarded by gates on the proporability frain, and was so situated that he could not see a train until within six or eight refer of the track, and where t

jury of culpable negligence on the part of the railroad company. 28

In Michigan, a man sued a railroad for injuries received by falling into a turn-table pit at night. It appeared that he was walking on a street which passed through the railroad company's yards; that the turn-table was located therein, and that there was a well-beaten path on the west side of this street about six feet from the turn-table. Plaintiff was very well acquainted with the locality and surroundings, but nevertheless missed his way and fell in. The Supreme Court decides that he cannot recover. 20 In the same state, the engineer of a train discovered a young child when a half mile away, but supposed the object seen was a pig on the track. He did not slacken speed until it was too late to stop the train after discovering the object to be a child. The railroad over that distance was unfenced. The child was burt, but not killed. The Supreme Court has sustained a verdict of seven thousand dollars against the company. 30

Burlington C., R. & N. R Co. v. Northwestern Fuel Co., 31 Rep., 652.

Rep., 652.

Rady v. Cleveland & M. R. Co., 31 Fed. Rep., 689.

Sewell v. Cape May & S. P. R. Co., 8 Cent. Rep., 577.

N. Y. & Lorg Branch R. Co. v. Capner, 8 Cent. Rep., 625.

Re St. Paul & N. P. R. Co., 33 N. W. Rep., 701.

Anderson v. Conu. South. R. Co., 5 S. W. Rep., 50.

Del. R. & L. R. Co. v. Rowland, 8 Cent. Rep., 814.

Penn. R. Co. v. Lippincott, 8 Cent. Rep., 818.

D. L. & W. R. Co. v. Cent. Stock Yard & Transit Co., 9 Cent., 111.

Rep., 111.

10 Bell v. P. S. & N. E. R. Co., 9 Cent. Rep., 138.

11 Central Trust Co. v. Wabash, St. L. & P. R. Co., 31 Fed. Rep.,

Central Trust Co. v. Wabash, St. L. & F. R. Co., 31 Fed. Rep. 8 State v. Roggen. 34 N. W. Rep., 108.

Memphis Elevator Co. v. M. & C. R. Co., 5 S. W. Rep., 52.

Union Pac. R. Co. v. Douglas Co., 31 Fed. Rep., 540.

N. Y. Ont. & West R. Co. v. Chapin, 8 Cent. Rep., 689.

Penn. R. Co. v. Jersey City, 8 Cent. Rep., 633.

Penn. R. Co. v. Jersey, 8 Cent. Rep., 405.

Penn. R. Co. v. Peters, 8 Cent. Rep., 405.

Penn. R. Co. v. Peters, 8 Cent. Rep., 405.

Penn. R. Co. v. Peters, 8 Cent. Rep., 405.

Penn. R. Co. v. Peters, 8 Cent. Rep., 405.

Penn. R. Co. v. Peters, 8 Cent. Rep., 405.

Penn. R. Co. v. Peters, 8 Cent. Rep., 405.

Penn. R. Co. v. Peters, 8 Cent. Rep., 408.

Penn. R. Co. v. Peters, 8 Cent. Rep., 528.

Mo. Pac. V. C. M. & St. L. R. Co., 34 N. W. Rep., 133.

Hausen v. M. & St. L. R. Co., 34 N. W. Rep., 829.

Church v. Northern Pac. R. Co., 31 Fed. Rep., 529.

McCroy v. C. M. & St. P. & Co., 31 Fed. Rep., 529.

McCroy v. C. M. & St. P. & Co., 31 Fed. Rep., 529.

McCroy v. C. M. & St. P. R. Co., 31 Fed. Rep., 346.

Phila. W. & B. R. Co. v. Front, 9 Cent. Rep., 346.

Phila. W. & B. R. Co., 37 N. W. Rep., 813

McSpart V. L. S. & M. S. R. Co., 33 N. W. Rep., 813

THE SCRAP HEAP.

= Train Robbery in Arkansas.

The north-bound train on the St. Louis, Arkansas & Texas was stopped by robbers, 10 miles from Texackana, Ark., on the night of Dec. 9, and the express car robbed. The postal clerk fired one shot in the way of defence. This was answered by a volley, and then the robbery was perpetrated without much excitement and with no futalities. The amount taken was about \$40,000.

Bound to Get There.

Dound to Get There.

Dennis (to street car driver)—O'im an a big hurry to rache Farty-stcond strate, Kelly.

Driver—Thin Oi wud advaise ye, Dennis, to take the nixt car behoind. Thim harses O'im drivin' be no good.

Dennis—Be gobbs, Oi wull, Kelly.—N. Y. Sun.

Not on the "Vestibule."

"What time is it by your non-magnetic," asked the train-boy of the conductor.
"Six-twenty," was the reply.
"Then I'll flit through with the doughnuts and mince pie.
We'll arrive in Boston before convulsions will have a chance to set in."

A Self-Opening Muse.

The Barnes coupler is a self-opener. It's jaw opens by gravity. In this respect the company's muse resembles its coupler. Its latest published ode begins blithely thus:

"Only the flugers are missing."

"Only the fingers are missing."

Then in a rather pessimistic way the poem tunefully states that the railroad company doesn't care if they are. But to remedy all this, and to bring about a condition of affairs when even the fingers won't be missing, the following metrical lamentation and melodious advice is freely offered by the poetic attaché of "The Barnes Automatic Car Coupler Co."

"Oh, how many widows and orphans,
And God only knows all the harms
That would have b en saved to our country
Had the railroads been using The Barnes.
So, boys, if you wish to die happy,
Don't listen to one of their yarns,
But make your road adopt as their coupler
The ONLY SELF-OPENER, 'The Barnes.'"

Heavier than a Welsh Rarebit.

There was a scrious accident to one of the largest and most costly bridges on the line of the Dakota & Great Midland route, a Dakota railroad managed by a local company. The following is an extract from the bridge watchman's report to the President of the company:

"I was approaching the east end of the bridge from my house," writes the watchman, "when suddenly I saw the jack-rabbit coming down the line towards the bridge, right between the rails, and running very rapidly. Realizing the disastrous effects his crossing would have on the bridge, I ran as fast as possible to either stop him or in some way induce him to cross on a walk, but I was too late, and the frightened animal rushed past me and on to the bridge, taking jumps almost as long as the rails. The structure trembled, swayed violently, and just as the rabbit reached the middle, the bridge, together with the abutments and the rabbit himself, crashed into the abyss below. I barely escaped with my own life, but retained presence of mind enough to direct my wife to take the piece of red flaunel off the baby's sore throat and go back up the track and signal the 7:40 limited Pullman express. I now have both bired men at work repairing the wreck, but it will be several days before travel can be resumed. I would recommend that strong gates be placed at the ends of the other bridges on our road to keep the rabbits off, as they seem to be jumping remarkably high this sear, and unless something is done balf of our best bridges are liable to be kicked down before spring, "—Chicago Tribune.

Chicago! Fifteen Minutes for Divorce!

Chicago! Fifteen Minutes for Divorce!

Daly's Theatre is showing "The Railroad of Love." Passengers change cars at Chicago on that road.—New Orleans Picanune.

Across the Isthmus

According to the not especially cheerful nor sanguine Chicago Tribune, "since the virtual abandonment of the Eads' ship railway scheme, and the threatened financial collapse of the Lessesp' project, public interest has centered in the Nicarauga scheme." According to the more cheerful and more sanguine New Orleans Times-Democraf, "it seems probable that the ship railway will be the first of the many lines completed across the Isthmus." According to the most cheerful and most sanguine M. de Lesseps himself, "I will go this winter to Panama and superintend the completion of the work." Persons interested in Isthmian transit who cannot find something to suit them in this concensus of opinion must be hard to please.—Financial Examiner.

A Day in a "Pleasure Car."

A Day in a "Pleasure Car."

The following account of a day's pleasure in the "Pleasure-car" in 1841, was quoted by Mr. C. P. Leland in his valuable "History of the Lake Shore & Michigan Southern," published in the September number of the Journal of the Association of Engineering Societies.

To the Editor of the Toledo Blade:

During most of the year 1841, I was employed as repair ing agent of the Erie & Kalamazoo Railroad, then in operation between Toledo and Adrian. According to schedule time, a passenger train with one coach would leave Toledo in the morning, make the run to Adrian, and return to Toledo in the afternoon, arriving about 6 p. m. The passenger car then used was about the size now in use upon our city street railroads, and was divided into three compartments, each having a front and rear seat, facing each other and running from side to side of the car, with a side entrance to each compartment. The track was ironed with the flat bar "strap rail," as it was called.

In December, 1841, one Saturday, the train left Toledo on time for Adrian. I was then at Palmyra, intending to take the train for Adrian and return to Toledo that evening. Owing to a severe storm of inin, freezing as it fell, the track became covered with ice. The train reached Palmyra about 4 p. m. I entered the middle compartment of the car, as the train started for Adrian, and met in the car J. Baron Davis and wife, of Toledo, sitting in the forward seat. Being acquainted with them I thought I would take a seat with them, but seeing the cushion upon the seat out of place, I took the rear seat, facing the one I had rejected. We had not gone more than half a mile from Palmyra when a "snake-head," as they were called (the end of a locsened bar), came crashing through the floor of the car, passing diagonally through the seat I had left vacant, the end of the bar striking me in my neck under the chin, and pushing me backward with such force as to break through the panel work partition which divides the compartments of the car. Just at thi

train was stopped. Frederick Bissell, the conductor, was much frightened. Before leaving the spot the guilty "snake shead" was once more spiked down, and we moved on, reaching Adrian at 6 p. m., baving made the run of 33 miles in 10 and pointed out some defects in the present methods.

ing Adrian at 8 p. m., having made the run of 33 miles in 10 hours.

This train left Adrian for Toledo at 7 p. m., and worked its way along over the ice-covered track until we got out of wood and water, when we picked up sticks in the woods and replenished the fire, and with pails dippped up water from the ditches and fed the boiler, at d made another run toward Toledo. Passing Sylvania we got the train to a point four miles from Toledo. when, being again out of steam, wood and water, we came to the conclusion that it would be easier to foot it the rest of the way, than to try to get the train along any further. So we left the locomotive and cars standing upon the track, and walked into the city, reaching here about 2:30 a. m. I was rather lame and sore from contact with the "snake-head," but gratified that we were enjoying the 'modern improvement"—railway travel.

TOLEDO, Jan. 13, 1882.

M. BRIGHAM.

General Railroad Mews.

MEETINGS AND ANNOUNCEMENTS.

Meetings of the stockholders of railroad companies will be held as follows:

eld as follows:

Housatonic, annual meeting, at the office, Bridgeport,
onn., Dec. 16.

Georgia Pavific, annual meeting, Birmingham, Ala., Dec.

New York, New Haven & Hartford, at the office, New New York, New Haven & Hartford, as the office, New Haven, Conn., Dec. 21.

Rome, Watertown & Ogdensburgh, annual meeting, at the office, New York, Dec. 28.

Georgia Company, annual meeting, at the office, High Point, Guilford County, N. C., Jan. 10.

Dividends.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Boston & Lovell, semi-annual, 3½ per cent., payable Jun. 2.

Central Bailroad & Banking Co. of Georgia, 4 per cent., payable Dec. 21.

Detroit, Bay City & Alpena, 4 per cent., payable Jan. 3.

Denver & Rio Grande, 3½ per cent. on preferred stock, payable Jan. 12.

Eost Alabama, semi-annual, 2½ per cent., payable Dec. 31.

East Alabama, semi-annual, 2½ per cent., payable Dec. 31.
Lehigh Valley, quarterly, 1½ per cent., payable Jan. 16.
Manhattan, quarterly, 1½ per cent. payable Jan. 3.
Milwaukee, Lake Shore & Western, semi-annual, 3½, on preferred stock, payable Jan. 14: also 4 per cent., annual, on common stock, payable Jan. 14.
Mi souri Pacific, 1½ per cent., payable Jan. 3, to stock-bolders of record Dec. 16.
Nashville, Chattanooga & St. Louis, quarterly, 1 per cent., payable Jan. 10.
New York Central & Hudson River, on New York & Harlem stock, 4 per cent., payable Jan. 3.
Oregon Railway & Navigation Co., quarterly, 1½ per cent.

cent. Richmond & West Point Terminal, 2½ per cent. on preferred stock, payable Jan. 3. St. Faul & Duluth, 3½ per cent., on preferred stock, payable Jan. 5.

Railroad and Technical Conventions

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The Western Society of Engineers holds its regular meetings at its hall, No. 15 Washington street, Chicago, at 7:30 p. m., on the first Tuesday of each month.

The New England Railway Club meets at its rooms in the Boston & Albany passenger station, Boston, on the second Wednesday of each month.

The Boston Society of Civil Engineers holds its regular monthly meetings at its rooms in the Boston & Albany station, Boston, at 7:30 p. m. on the third Wednesday of each month.

The New York Railroad Club meets at its rooms, 113 Lib erty street, New York City, on the third Thursday of each

erty street, New York City, on the third Thursday of each month.

The Western Railway Club meets in Chicago the third Wednesday in each month.

The American Society of Mechanical Engineers, eighth annual meeting, Philadelphia, Pa., Nov. 28 to Dec. 2, at the Continental Hotel.

The American Society of Civil Engineers meets at its rooms, 127 East Twenty-third street, New York, the first and third Wednesday of each month.

The Engineers' Club of St. Louis meets the first and third Wednesday of each month till June.

The Central Railway Club meets at the Tifft House, Buffalo, the fourth Wednesday of January, March, May, August and October.

Engineers' Club of St. Louis.

Engineers' Club of St. Louis.

The an.ual meeting was held Dec. 7. The following were elected members: Reno De O. Jobnson, Oscar W. Raeder, James C. Simpson and Albert H. Zeller.

The following officers were elected: President, M. L. Holman; Vice-President, J. A. Ockerson; Secretary, Wm. H. Bryan; Treasurer, C. W. Nulcher; Librarian, J. B. Johnson; Directors, Wm. B. Potter and F. E. Nipher.

There has been a net gain of 13 in membership, which is now 133, the largest in the history of the Club. The losses by death were but two, but those were most serious to the to the Club and the profession. They were James B. Eads and C. Shaler Smith.

A paper was read by P. M. Bruner on the "Action of Frost on Concrete Work." He said that the additi in of sait would lower the freezing point 1 degree for 1 per cent. of salt added, up to the point of saturation.

The Railroads' Committee on Couplings for Steam Heating.

Steam Heating.

READING, Pa., Dec. 9, 1887.

At a meeting held at the Astor House, Nov. 15, a committee was appointed to whom was referred the subject of couplings to be used in the coupling of cars, for steam heating of passenger trains, with the purpose in view of uniformity in thee important connections.

Another meeting at the same place is called on Dec. 20, at 10 o'clock a. m., to consider the subject further, and it is desired that all roads and sleeping-car companies interested in the matter of steam heating of cars be represented at the meeting.

G. W. CUSHING,
H. STANLEY GOODWIN,
A. S. VOGT,
R. C. BLACKALL,
J. W. CLOUD, Committee.

Engineers' Club of Kansas City.

regular meeting was held Dec. 5. A paper by Mr. H. C. earsons was read on "Deviation of the Ship's Compass," p

PERSONAL

-George R. Hardy, Chief Engineer of the Lake Shore & Michigan Southern, has resigned.

—W. T. Lambie, Division Roadmaster of the Southern Pacific at Los Angeles, Cal., has resigned.

—W. J. Spicer, General Manager of the Chicago & Grand Trunk and the Detroit, Grand Haven & Milwaukee roads, has resigned.

-Thomas M. King has resigned the Second Vice-Presidence of the Baltimore & Ohio, because of the election of Samue Spencer to the Presidency.

John H. Inman has declined the post of President of the Lmond & Danville, which the leading security holders of company have been urging upon him.

—W. M. S. Dunn, formerly General Superintendent of the Chesapeake & Ohio, who has been ill for some time, has re-covered his health, and will soon resume his connection with the company in the position of Consulting Engineer.

the company in the position of Consulting Engineer.

—Samuel Spencer, the new President of the Baltimore & Ohio road, was born in Georgia in 1847, but belongs to an old Maryland family. As a boy he served in the Confederate army. He began railroad life in an obscure position on a Southern road. He entered the service of the Baltimore & Ohio as an assistant supervisor. In 1877 he became Superintendent of Transportation on the Virginia Midland, after which he was Superintendent of the Long Island road. He went back to the Baltimore & Ohio in 1879, succeeding Robert Garrett as ThirdVice-President. In 1884, when Robert Garrett succeeded his father as President, Mr. Spencer became Vice-President. It is said that President Spencer will receive \$25,000 a year, which is 6½ times the salary of his predecessor.

Predecesor.

—Brief mention was made last week of the death of Mr. Robert Curtis, Master Mechanic of the Columbus shops of the Pittsburgh, Cincinnati & St. Louis. Mr. Curtis was highly esteemed, and many railroad officers and employés will regret his death and testify to his virtues. He was a thoughtful, earnest and capable man, and had high mechanical ability.

Mr. Curtis was born in Syracuse, N. Y., on the 16th of September, 1835. His father was a practicing physician and very desirous that his son Robert should also become a member of that profession. Even at an early age, however, the boy gave evidences of marked fondness for mechanics, and the idea of becoming a physician was distasteful to him. A portion of his education was obtained at a school in Ithaca, N. Y., where he got some knowledge of mechanics and a good mathematical education. Later he entered the shops of the Erie Railroad at Buffalo, N. Y. His next position was with the Menomee Locomotive Works, and later he was employed by the St. Paul Railroad in their shops, where he remained about two years. His abilities and progress led to his being called to the position of Superintendent of the Bay State Iron-Works, of Milwauke, now the Cream City Works. He held that position to the entire satisfaction of all concerned until he went to Columbus, June 30, 1860, to accept the position of General Foreman in the Pan Handle shops.

shops.

He was for many years Master Mechanic of the Columbus, Chicago & Indiana Central (subsequently the Chicago, St. Louis & Pittsburgh) railroad shops in Columbus, his jurisdiction extenuing from Columbus to Indianapolis. Since Aug. 1, 1885, he has been Master Mechanic of the Pittsburgh, Cincinnati & St. Louis shops in Columbus, which were built to replace the old C., St. L. & P. shops and to be the centre of new work of the Southwest system of the Pennsylvania lines west of Pittsburgh. Mr. Curtis also took his place as a citizen in the affairs of his city, and at his death was President of the Board of Water-works Trustees.

ELECTIONS AND APPOINTMENTS.

Arkansas & Louisiana.—Paul F. Beardsley has been appointed General Superintendent, with headquarters at Washington, Ark.

Baltimore & Ohio.—At a special meeting of directors, in Baltimore, last week, Samuel Spencer was elected Presi-dent.

Baltimore & Philadelphia.—The annual meeting in Wilmington, Del., this week, resulted as follows: James B. Washington, of Pittsburgh, was elected President; William L. Clements, Vice-President, to succeed Thomas L. King; W. H. Ijams, Treasurer; John C. Tarrell, Secretary; directors, J. B. Washington. William M. Canby, Victor Dupont, L. C. Cassidy, W. L. Clements, Theodore Frothingham, J. Van Smith and J. V. Patton.

Boston & Albany.—The old board of directors was elected this week as follows: William Bliss, of Boston; Henry Colt, of Pittsfield; John Cummings, of Woburn: Edward D. Davis, of Worcester; C. M. Depew, of New York; Jarvis N. Dunham, of Pittsfield; Edward B. Gillett, of Westfield; Samuel Hoar, of Concord; Moses Kimball, of Boston; J. C. Rogers, of Peabody; James A. Rumrill, of Springfield; Charles S. Sargent, of Boston, and M. D. Spaulding, of Boston

Boston & Maine.—The following directors were elected this week: George C. Lord, Amos Parl, N. J. Bradlee, R. J. Nichols, W. J. Stephens, J. S. Ricker, Richard Onley, S. C. Lawrence and Frank Jones.

Lawrence and Frank Jones.

Buffalo & Southwestern.—The following were elected directors of this leased branch of the New York, Lake Erie & Western at the meeting this week in Buffalo, N. Y.: James Adams, W. E. Bailey, W. S. Bissell, Andrew Langdon, Henry Martin, W. H. Newman, H. G. Nolten, Daniel O'Day, O. P. Ramsdell, J. M. Richmond, E. G. Spaulding, all of Buffalo; R. Kingman, of Battle Creek, Mich., and William Barnes, of Pittsburgh. The directors elected officers as follows: President, W. S. Bissell; Vice-President, James Adams; Secretary and Treasurer, Frank T. Moulten.

Chicago, Hannibal & Springfield.—The incorporators of this Missouri company are Roland C. Nickerson, R. D. Fow-ler, E. F. House, Joseph Lathrop, Roscoe H. Fudge and John L. Lathrop, all of Chicago.

Chicago, Hinsdale & Southern.—The incorporators of this Illinois company are David A. Courter, of Hinsdale; William Fay, Arthur L. Jewett and Aaron Shubart, of Chicago; Albert Fishell, of Pittsfield, and Edward Maher, of Englewood.

Chicago, Kansas & Nebraska.—G. D. Bacon has been ap-ointed General Agent, with beadquarters at Cincinnati.

Fort Worth & Denver City.— The following directors were elected this week: fhomas W. Pearsall, Alexander J. Mayer, J. T. Granger, of New York; W. T. Walters, of Baltimore: Morgan Jones, J. P. Smith, William H. Harrison, J. M. Brown, William F. Summerville, of Fort Worth, Texas.

Hartford & Connecticut Valley.—At the meeting in Hartford this week the following directors were elected: Henry C. Robinson, Samuel Babcock, E. H. Trowbridge, W. D. Bishop, Nathaniel Wheeler, George H. Watrous, E. M. Reed, Charles P. Clark and D. C. Spencer. Henry C. Robinson has been elected President; Samuel Babcock, of Middletown, Vice-President; W. C. Brainerd, Secretary, and William L. Squire, of New Haven, Treasurer.

Louisville & Nashville.—Donald Allen has been a ivision Superintendent with headquarters at Bira

Marine (Coney Island).—The following directors were elected this week: Austin Corbin, Frederick W. Dunton, Charles R. Flint, J. Rogers Maxwell, Henry W. Maxwell, Gilman S. Moulton and J. Baxter Upham.

Mississippi Valley.—The following officers and directors have been elected: President, Hiram R. Steele; Vice-President, R. F. Learned; Secretary, John Rawle: Treasurer, Henry Frank; directors, H. R. Steele, R. F. Learned, Samuel Block, Henry Frank, I. Lowenburg, I. Friedler, John Rawle, John Smyth, Henry A. Garrett.

Montana, Kansas & Texas.—The following officers were elected last week: President, A. L. Tomblin, of Stanberry, Mo.; Vice-President, A. C. Burdick, of Chicago; Secretary, F. L. Sheeks; Treasurer, Alfred Pratt, of Syracuse.

F. L. Sheeks; Treasurer, Alfred Pratt, of Syracuse.

New York & New England.—At the meeting in Boston this week the following ticket was elected: Eustice Fitch, Joseph H. French, William P. Shinn, A. S. Moss, T. Stevens, Nicholas Sheldon and B. F. Vaughn, of Providence; J. L. Howard, of Hartford; William H. Stevenson, of Bridgeport; George M. Landers, of New Britain: Thomas Rutter, Wm. H. Starbuck, John L. Macaulay, A. E. Orr, Sidney Dillon, E. S. Norton, Henry Hentz, J. A. Bostwick and E. V. Carey, of New York, Messrs. Moss, Stevenson, Howard, Orr, Norton, Hentz and Carey are new men, succeeding G. M. Rice, P. J. Kingsbury, Elijah Smith, A. E. Bateman, Herman Clark, T. W. Pearsall and John G. Moore. The total number of shares voted was 150,075, all of which were cast for the names mentioned.

the names mentioned.

New York, Providence & Boston.—At the annual meeting, this week, the following directors were elected: Samuel D. Babcock, of New York; George McCullough Miller, of New York; Nathan F. Dixon, of Westerley, R. I.; Robert Knight, of Providence; Henry C. Robinson, of Hartford: George Peabody Wetmore, of Newport; John L. Riker, of New York; Benjamin M. Lapham, of Providence; J. Walter Wood, of South Orange, N. J.; J. Pierpont Morgan, of New York, and George G. Haven, of New York. The directors elected the following officers: President, S. B. Babcock; Vice-President, George M. Miller: Secretary and Treasurer, A. R. Longley; General Manager, J. W. Miller; Superintendent, J. B. Gardiner.

Ohio Valley Railway & Terminal.—The directors of this

Ohio Valley Railway & Terminal.—The directors of this Indiana company are: Charles Veile, John Ingle, R. H. Ingram, M. J. Bray, Jr., J. B. Montgomery, Jordan Giles and J. F. Clay.

Oregon Railway & Navigation Co.—A. L. Maxwell has een appointed General Passenger and Ticket Agent, with eadquarters at Portland, Or.

headquarters at Portland, Or.

Richmond & West Point Terminal.—At the annual meeting in Richmond, Va., this week, Alfred Sully, of New York, was unanimously re-elected President: The following directors were also unanimously chosen: John H. Imman, George S. Scott, Samuel Thomas, C. M. McGhee, John G. Moore, S. Wormser, George F. Stone, J. A. Rutherford, William Rockefeller, Calvin S. Brice, Emanuel Lehman, R. T. Wilson, R. P. Flower, John H. Hall, all of New York; and James B. Pace and T. M. Logau, of Richmond.

St. Paul & Southern.—The incorporators of this Minne-ota company are A. P. Jamison, P. C. Bailey, J. C. White and Thomas Bohen, of Waseca, Minn., and F. D. Woodbury, t Kansas City.

San Diego & Elsinore.—The incorporators of this company are: Governor Stevenson, of Nevada; Ex-Gov. Merrill, of lowa; Richard Gird, of Pomona, Cal., and T. H. Heald, of Riverside, Cal.

San Diego & Old Mission.—The directors of this California company are: W. H. Holabird, C. J. Fox, C. M. Fowler, Robert Allison, John G. Capron, R. A. Thomas, C. C. Seaman, C. C. Jones, of San Diego, and Harvey D. Wilson, of Los Angeles.

Schuylkill River East Side—J. B. Washington, of Pittsburgh, has been elected President, in place of Thomas M. King, resigned. Ivan Smith and Lewis C. Cassidy have been elected directors.

Southern Pacific.—J. H. Wallace has been appointed ivision Roadmaster, with headquarters at Los Angeles

Western Passenger & Ticket Agents' Association.—At a meeting in St. Louis this week the following officers were elected: President, J. P. Nourse, of the Central Iowa roads; Vice-President, F. A. Bills; Secretary, J. F. Hannegan; Executive Committee, D. Wishart, D. P. Martin, C. P. Atmore, F. Warner and J. G. Charlton; Arbitration Committee, A. F. Merill, F. Chandler and W. A. Thrall.

Zanesville, Mt. Zenia & Marion.—B. E. Cutler has been appointed Chief Engineer of this road and of the Painesville, Wooster & Ohio, vice Col. John B. Yaks, resigned.

OLD AND NEW ROADS.

Alabama Great Southern,—The company has brought suit against the Indianapolis Car Works in the sum of \$250,000 for the alleged failure of the company to furnish some freight cars in an agreed time.

Allegheny & Kinzua.—The company has obtained a charter in Pennsylania. The line will run from a point on the state line between New York and Pennsylvania, in Bradford County, to Sugar Bun, in McKean County, a distance of 6 miles. Capital stock, \$600,000.

of 6 miles. Capital stock, \$600,000.

Baltimore & Ohio.—It is stated that arrangements have been concluded for building the Berkeley Springs (W. Va.) branch and that the road is to be completed and in operation by next July.

At the meeting of directors in Baltimore last week, General Counsel John K. Cowen read the syndicate's terms of the consolidated mortgage. The indebtedness of the company on Sept, 30, not secured by mortgage liens, was \$11, 148,007. The items of the floating debt proper are the loans and bills payable, amounting to \$8,769,314. The sum of

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\$533,505 due the sinking funds requires no cash payment, because it is taken care of by the consolidated mortgage bonds. The face of the entire main line mortgage debt is stated at \$31,432,000, less \$912,000 paid on account of loans of 1880 and 1885, which have been extended at 4 per cent., and less \$841,122 of cancelled bonds in sterling funds, leaving a balance of \$29,678,808. Of the consolidated mortgage bonds \$8,177,000 are reserved to be exchanged for the securities now in the sinking funds. If so exchanged these latter securities can be disposed of by the company at its pleasure, and if not exchanged, \$7,500,000 of the consolidated mortgage bonds can be sold, and the arrangement with the London banking syndicate contemplates the disposal to them of \$5,000,000 of thereof. The remainder of the consolidated mortgage bonds, \$21,423,000, are to be reserved to retire the residue of the mortgage indebtedness not provided for by existing sinking funds.

The annual cash contributions to the sinking funds, to be made by the company under the Sterling mortgages, are equivalent to \$280,720, and the yearly increment to the fund as it now stands is \$360,030, making a total annual investment in the sinking funds of \$640.750. Hereafter, instead of this sum being paid in cash to retire indebtedness that will not fall due until 1895, 1902 and 1910 respectively, consolidated mortgage bonds to that amount will be paid into the sinking funds each year, and the increasing increment of that fund will be paid in the same manuer.

The consolidated mortgage, therefore, accomplishes two results:

First—It furnishes the company with at least \$7,500,000 for leaved which each which each part discounts.

that fund will be paid in the same manner.

The consolidated mortgage, therefore, accomplishes two results:

First—It furnishes the company with at least \$7,590,000 of bonds which can be disposed of.

Second—The company will be relieved in the future from making large cash investments in the sinking fund by placing therein consolidated mortgage bonds which it will have in its treasury for that purpose. The use of the consolidated mortgage bonds for sinking fund purposes does not increase the debt, but simply keeps it where it now is.

The consolidated mortgage covers the main line and branches (exc'usive of the Washington branch) between Baltimore and Wheeling, the two Ohio River bridges, the company's Washington branch stock, amounting at par to \$1,028,000, and the entire amount of the first mortgage bonds of the Wheeling, Pittsburg & Baltimore, amounting to \$5,000,000, and secured by mortgage upon its line between Pittsburg and Wheeling.

The main line mortgage debt, including car trust bonds, is placed at \$81,177.640, the annual interest upon which is \$4,244,668, and first and second preferred stock, six per cent., \$5,000,000, with interest amounting to \$300,000. The total rentals of leased lines amount to \$865,051. The report states that after a dividend of 4 per cent., paid on May 17, there was a balance from earnings of \$17,605, besides provision for a reduction of the bonded debt and for sinking funds to the amount of \$775,461.

Under the programme agreed upon with the syndicate for the issue of \$5,000,000 of reorosolidated mortgage bonds and of \$5,000,000 of car trust bonds will be issued, the charges for 1888 will be as follows:

Interest on \$2,500,000 car trust bonds, due Jan. 1, 1888,

of \$5,000,000 of preferred stock, assuming that the entire \$2,500,000 of car trust bonds will be issued, the charges for 1888 will be as follows:

Interest on \$2,500,000 car trust bonds, due Jan. 1, 1888, \$56,250; payment of principal of car trust bonds due Jan. 1, 1888, \$250,000; interest on car trust bonds \$1,250,000, due Jan. 1, 1888, \$350,625; total, \$356,875. Deduct interest on car trust bonds July 1, 1887, \$47,790; increase in car trust payments in 1888 over 1887 is therefore \$309,085; add interest on \$5,000,000 mew consolidated mortgage bonds, \$250,000, and for dividends on \$5,000,000, third series, 6 per cent. preferred stock, \$300,000, making \$550,000; deduct from the total of \$859,085 the new consolicated mortgage bonds for the appropriations for the sinking funds of 1895, 1902 and 1910, and the amount of increment from the same sinking funds, a total of \$640,750. This leaves a net increase of \$218,334. Add above stated charges of 1887, excluding interest on bills payable (\$176,535), namely, \$6,127,166, and the addition of these two sums shows the charges for 1888 to be \$6,345,500.

A report from the Treasurer was presented at the meeting, showing the assets of the company to be \$115,148,494, and the liabilities the same, less \$48,083,720 surplus fund, which represents invested capital derived from net earnings, and which is not represented by either stocks or bonds.

Bangor & Castine.—The company is about to let conacts for 30 miles of road. James Adams, of Bangor, Me. President of the company.

Boston & Maine.—There will be two bills presented in the Massachusetts Legislature this winter, permitting this company to consolidate with the Eastern. One bill will permit the consolidation on the basis of 2 shares of the New Eastern 5 per cent, preferred stock for one share of the present Boston & Maine.

At the annual meeting in Lawrence, Mass., this week, it was voted to issue terminal bonds as provided by legislative acts, and also to confirm the improvement bonds previously issued on account of the Eastern road.

Brunswick & Albany.—At a meeting of stockholder this week it was resolved to sell this line, which extends from Brunswick to Albany, Ga., to the Savannah, Florida & Western. The committee appointed to conduct the transfer will receive £260,000 in 4 per cent. mortgage bond of the Savannah, Florida & Western, and £130,000 in in come bonds of that road.

California & Oregon.—The ceremony of driving the last spike on the completion of this road to Portland, Oregon, will occur at Ashland, Oregon, on Dec. 17. A party of guests, including the Governor of California, will go from. San Francisco to witness the ceremony. The party will then proceed to Portland and jubilate with the citizens of that place. The completion of the road gives all rail communication on the coast from the Mexican boundary to Puget Sound.

Canadian Pacific.—Supply trains are already running over the new section between Algoma Mills and Sault Ste. Marie, Ont., and a regular passenger and freight service will be inaugurated in about a month, when the International bridge at the "Soo" will be completed.

Central of New Jersey.—From Jan. 1 the company will adopt a "sliding scale" tariff for season commutation tickets, whereby purchasers pay, for each of the first three months, a rate considerably above that on which yearly tickets are based, and then for the subsequent months a sum enough below the average monthly rate to make the total for twelve consecutive months only about 6 per cent. above the sum charged for a yearly ticket.

Central Vermont.—The report that the company would surrerder the Rutland road to the Delaware & Hudson Canal-Co. on Jan. 1 is officially denied. There has been no conference between the managers of the two companies for the surrender of the Rutland, and there is no likelihood that the Central will be asked to do so until the termination of the Rutland lease, which has three years to run. the Central will be asked to do so until the termination of the Rutland lease, which has three years to run.

Chattanooga, Rome & Columbus.—L. Rossiter, of Tallapoosa, Ga., has the contract for grading 15 miles of coal and ore traffic of the Shenango Valley, in Pennsylvania,

road between Chattanooga and Rome, and has commenced

Chenango & Alleghany.—It is believed that the dif-ficulties that have prevented the reorganization of this com-pany have been removed, and the reorganization will be com-pleted within the next few weeks.

Chicago, Hannibal & Springfield.—The company has filed articles of incorporation in Missouri. The road is to be built through the counties of Marion, Rails, Audrain, Boone, Cooper, Moniteau, Morgan, Camden, Dallas, Polk and Greene. Length of road, 250 miles. Capital stock of company, \$5,000,000.

Chicago, Hinadale & Southern.—This company has been incorporated in Illinois to build a road from Chicago to Shawneetown in Gallatin County, with a branch to Streator. Capital strck, \$500,000.

Chicago, Milwaukee & Northern.—The headings the great tunnel 4 miles from Monticello, Wis., met last eek. Track will be laid through in a few days. The work a the tunnel was begun a week ago.

Chicago, Milwaukee & St. Paul.—This company vill build a branch from Mather, Juneau County, Wis., 14 niles northwest into Jackson County.

Chicago, Rock Island & Pacific.—On Dec. 18 the company will put on fast trains between Chicago and Council Bluffs, making the trip east or west in 18 hours.

Chicago, St.Paul & Kansas City.—A dispatch from Kansas City, Mo., says that President Stickney and others re there with a view of obtaining terminal facilities for the

Cincinnati, Hamilton & Dayton.—The President and other officials of this company were in consultation with President McKeen, of the St. Louis, Vandalia and Terre Haute, last week trying to effect a settlement of the negotiations begun six months ago by Henry S. Ives for the purchase of the latter road, No agreement was reached. The Ives notes were not paid. The deal is therefore practically off, as the time of the option has expired.

Cincinnati Southern.—The machine shops, in place of cose recently burned at Ludlow, will be rebuilt at Somer-

Cleveland, Akron & Columbus.—The first train went over the Dresden branch on Dec. 7. This branch extends from Killbuck, O., in Holmes County, on the main line of the Cleveland, Akron & Columbus to Dresden Junction in Muskingum County, 34 miles. In the vicinity of Warsaw a tunnel 1,450 ft. long was cut. The line will at some future time be extended to Marietta. A spur will also be built from the branch near Warwick into the cannel coal fields of Coshocton County.

Denver, Memphis & Atlantic.—The track on ad has been extended from Scott City, Kan., to the

Drummond County (Canada).—Track is laid 12 iles, from Drummond to the Isle of Pines, Nicolet River, he line is located from St. Leonard to Aston, on the line of miles, from Drum The line is located the Grand Trunk.

Duluth & Iron Range.—The company has let a large contract for piling to Bradley & Hanford, lumbermen, of Du luth, Minn., for the new ore docks to be built this winter a Two Harbors, Mich. C L. White & Co., of Tower, have the timber contract. There will be 1,000 ft, of extension on the

Eastern.—At the annual meeting in Boston this week it was voted that the interests of this company require a consolidation of stocks and franchises between it and the Boston & Maine, and that the directors of this company are requested to co-operate with the directors of the Boston & Maine in procuring from the Legislature at its next session the proper enabling legislation. The directors' report shows a net income of \$425,082, and a surplus for the year of \$325,082. For the first time since the less of the road to the Boston & Maine the maximum amount to which the Eastern is entitled has been received, viz., \$436,000.

Esquimalt & Nanaimo.—The company has applied for a charter in British Columbia to build a branch line from Victoria, B. C., to a point on the Straits of Fuca, opposite Port Angeles, Wash Ter., connecting there, by means of a ferry, with a line to be built from Kalama, Oregon, to Port

Georgia, Carolina & Northern.—The contrac grade this road from Athens, Ga., to the Middle Oc River has been awarded to T. W. Powell, of Athens.

Grand Trunk.—The first train on the Beauharnois Junction road was run last week from Beauharnois to Sainte Martin, Ont.

Junction road was run last week from Beauharnois to Sainte Martin, Ont.

Houston & Texas Central.—A new plan of re-organization has been prepared, under which it is proposed to foreclose all existing mortgages and form a new company. The first mortgage bonds of all the divisions are to receive a cash bonus of \$50 on deposit of each \$1,000 bond, and subsequently payment in cash in cash of back interest to July 1, 1887. For the principal of the bonds, new 5 per cent. gold bonds running 50 years from that date will be issued. The mortgage will cover the entire railroad property and the lands embraced by the existing first mortgages. The second or consolidated mortgage bonds will receive \$180 each in 6 per cent. debenture bonds and for the principal new 6 per cent. gold bonds drawing interest from Oct. 1, 1887. The bonds will be secured by a second mortgage on the railroad and a first mortgage on the lands not covered by the first mortgage. The general mortgage bonds are to receive new bonds bearing 4 per cent. interest from Oct. 1, 1887, and \$120 in 4 per cent. debenture bonds. The general mortgage will cover the entire property, and be secured further by the deposit with its trustees of \$1,149,000 of the new second mortgage bonds. The Southern Facific Co. will guarantee the interest of all the mortgage bonds, and principal and interest of debenture bonds which are subordinate to the general mortgage bonds and are to be payable in ten years from Oct. 1, 1887.

Bonds are to be deposited, under the plan, with the Central Trust Co., which will issue negotiable receipts. The capital of the new company will be \$10,000,000, and present stockholders will be assessed a sufficient amount to discharge the floating debt and provide the cash payment to the first mortgage bonds.

Kinderhook, Valatie & Stuyvesant.—Construction has been begun on this road, which will run from Kinder-

Kinderhook, Valatie & Stuyvesant.—Construction has been begun on this road, which will run from Kinderhook Lake Park at Niverville, N. Y., on the Boston & Albany road, through Valatie, Kinderhook, to Stuyvesant, on the Hudson River, 10 miles. Thomas Moore, of Elizabeth, N. J., has the contract for the work.

reaching 5 mills and 17 blast furnaces and a large number of other industrial establishments in the vicinity of Sharon.

Leesburg & Lake Region.—The company will at ace locate its line from Leesburg to Stewart's Landing,

Los Angeles, Long Beach & Ocean.—The survey of this road from Los Angeles to Long Beach, Cal., was begun last week.

Louisville & Nashville.—The company will shortly exin the construction of a branch between Ripton and Pineannle, Ala

Macon & Covington.—It is reported that arrangements are being made for the completion of this road from Ionticello to Athens, Ga.

Metropolitan Improvement Co.—This San Francisc company is making a survey for a road to extend from Her mosillo to Mazatian, Mex., passing through the anthracit coal fields of Sonora.

Mexican Central.—The completion of the branch to the Gaudalajara in May is to be celebrated by a series of grand festivities. The journey from the City of Mexico to Guadalajara, which now requires 8 days, will, it is said, be made over the new road in 24 bours.

Mexican International.—The road has been com-eted to a connection with the Mexican Central, and will on be opened for business.

Minneapolis, Sault Ste. Marie & Atlantic.—The bad was completed to Sault Ste. Marie, Mich., on Dec. 14. Legular trains will run over the road on Jan. 1.

Missouri, Kansas & Texas.—The depreciation in the ecurities of this company has caused a number of the ecurity holders to take steps toward making an investigation of the road in order to ascertain the cause of the decline a the stocks and bonds, the quotations of which show a decrease in value of over \$20,000,000 in the last few months. To organization has yet been tormed, but one is now in rogress.

New Roads.—It is positively stated that a road is to be util from Tustin, Cal., a small town near Santa Ana, to dodena. David Hewes, of Modena, is the originator of the

New York, Boston & Montreal.—Judge Lacombe, of New York, has denied the application of the Receiver of this road to convert 2,840 shares of New York City & Northern stock held by him into shares of the recently organized New York & Northern, at a bonus of \$10 a share. He instructed the Receiver to sell the block of stock at public auction to the highest bidder.

Judgments to the amount of \$561,294 were filed last week against this company in favor of William Foster, Jr., and Rowland N. Hazard.

New York Central & Hudson River.—The report circulated last week that the Wagner Palace Car Co. would build a factory on the 30 acres of land recently bought by Cornelius Vanderbilt and situated at 153d street, New York, has been officially denied. It is said that the New York Central will use the land as a storage yard for cars, and that no buildings of consequence will be erected.

buildings of consequence will be erected.

New York & New England.—At the meeting in Boston this week the stockholders voted to authorize the directors to issue bonds to the amount of \$1.950,000, to take up the two present mortgages on the Boston terminal property, which amount to \$1,621,532. The \$328,468 above will be kept in trust for future improvements. The vote of 150,075 shares was unanimously given in approval of the leases of the Milford & Woonsocket, Milford, Franklin & Providence, and the Massachusetts & Rhode Island roads.

The stockholders of the Rhode Island & Massachusetts have approved the lease of the road to the New York & New England for 100 years.

New York, Providence & Boston.—At the annual meeting of stockholders the directors were authorized to increase the stock \$1,000,000 to make the total issue \$5,000,000. Resolutions were also passed looking to a conference with the authorities of Providence, with regard to improved terminal facilities.

ence with the authorities of Providence, with regard to improved terminal facilities.

Northern Pacific.—The U. S. Grand Jury in Montana has found indictments against Thomas T. Oakes, Vice President of this company; J. M. Buckley, Assistant General Manager; E. L. Bonner, Timber Agent; A. B. Hammond and L. J. Hathaway, for unlawfully taking timber from the public lands and shipping the same out of the territory. General Anderson, Chief Engineer of the company, on being questioned about the indictments, explained first that the Montana Improvement Co. made a business of cutting timber for the road and supplying the mining camps at Butte, working under the laws of Congress. He said that the great trouble there was that the land was not surveyed. The charter of the Northern Pacific expressly stated that the land should be surveyed as soon as practicable, and the road had long endeavored to get this done, but Commissioner Sparks had always refused. Although there was a law of Congress allowing private parties to have land surveyed by advancing the money to pay for the same, Commissioner Sparks refused to allow the road to do this. The timber had been cut for purposes of construction and repairs on the road, but the government inspectors had denied the right to cut it for repairs, and these indictments are for timber cut at Eddy Station in 1884. Next summer the company will build a branch to White Sulpbur Springs, Mont., a district which promises to become a profitable mining section.

Ohio, Indiana & Western.—Articles of consolidation have been filed by the Springfield & Western and the Indiana & Western companies under the above title. The line extends from Tazewell, Ill., to Springfield, O.

Ohio Valley Railway & Terminal Co.—Articles of corporation have been filed in Indiana by this company, ath a capital stock of \$300,000.

Oregon Improvement Co.—The cempany is buildin a road 70 miles long, from Port Harford, on the coast of California, into the interior. Forty miles are in operation and the entire road will be completed within three months.

Paris, Georgetown & Frankfort.—The survey now progressing on this road from Paris, Ky., into Virgin through the coal and iron fields. Nearly \$1,000,000 has be subscribed towards its construction by counties throu

Pennsylvania Company.—The company will soon put a operation what is known as its Red Bank Division, which rill admit of its running its Chicago trains into the Chicago, t. Louis & Pittsburgh depot at Cincinnati, instead of the Encimant, Hamilton & Dayton.

The company has built 1,800 new cars of all descriptions its Fort Wayne shops this year.

Pennsylvania.—The Shenandoah branch of this road ill be operated for the first time on Dec. 19. This will will be operated for the first time on Dec. 19. This will take the Penusylvania into the Mahanoy anthraeite coal fields, and give it connection there with the Lehigh Valley and the Philadelphia & Reading systems.

The company is rapidly completing the work of laying two additional tracks between Jersey City and Philadelphia and it will all be done early next year.

Portsmouth, Texarkana & Gulf.—A preliminary survey of this road is now being made from Texarkana to Dallas, in Polk county, Ark. The length of the road will be about 160 miles, a portion of which has been graded. The line penetrates the mineral regions of Southwest Arkansas.

St. Ignace & Sault Ste. Marie.—The road will be uilt next Spring from St. Ignace, Mich., to P'ne River, a nort distance from Sault Ste Marie, connecting with the linneapolis, Sault Ste. Marie & Atlantic.

St. Louis, Keokuk & Northwestern.—The company has been incorporated in Illinois by the Chicago, Burlington & Quincy people for the purpose of buying the old St. Louis, Keokuk & Northwestern road and extending the same to St. Louis from its present terminus at St. Peters, Mo. Capital stock of new company, \$8,000,000.

St. Louis & San Francisco.—The stockholders have accepted the proposition to issue bonds to the amount of \$50,000,000, to be used in acquiring or building other railroads to connect with this one, at the rate of not more than \$15,000 per mile, to be secured by first mortgage bonds and a majority of the capital stock of the companies owning such

St. Paul, Minneapolis & Manitoba.—The company now surveying a new line from Hinckley, Minn., its present junction with the St. Paul & Duluth, to West Superior traders are at work on the extension from Huron to Woonselect. Data ent junction Graders are socket, Dak.

socket, Dak.

A survey will immediately be made for the road between Sioux Falls and Yankton, Dak.

St. Paul & Southern.—Articles of incorporation have een filed in Minnesota. Capital stock, \$1,060,000.

San Diego & Elsinore.—Articles of incorporation have been filed in California. The proposed road will extend from San Diego about three-quarters of the way across San Diego county to the iron region of Lake Elsinore. From this point, it is expected, the Carson & Colorado will make connection with the Union Pacific. Work is to begin immediately on the new road, and will be completed within a year.

San Diego & Old Mission.—Organized in San Diego, Cal., to build a road from that city to Grantville.

Savannah, Dublin & Western.—Work on this road has been entirely abandoned. The United States Construction & Improvement Co. appears not to have lived up to its agreement with the contractors, Messrs. Carpenter, Grant, Mundy & Co., failing to provide right of way into Savannah and to furnish the steel rails. Those interested in the building of the projected road are still hopeful, but not sanguine.

Seattle & West Coast.—Work on this road from Seattle, Wash, Ter., to a connection with the Canadian Pacific, in British Columbia, has been in progress during this summer. Thirteen miles to Snohomish are graded and tracklaying is to begin at once. Sinclair & Co. have contracted to finish the 97 miles to the Canadian Pacific connection.

Southern Pacific.—The line from Willows, Cal., toward Mendocino County, up the Napa Valley, is greded and ready for tracklaying.

Spokane & Palouse.—This road, from Spokane Falls to Palouse, Wash. Ter., is now completed for 30 miles and is graded for 20 miles more.

Texas & Pacific.—The Reorganization Committee has issued a statement about the condition of the property. According to the report the road has been greatly improved, and a large amount of equipment has been added. In behalf of the committee it is said:

It is manifest that during the period covering the physical reconstruction of the road, it was impossible to ascertain with any accuracy monthly net earnings. Now, however, that the work, although not entirely completed, has so far advanced that the road and its rolling stock is in good running condition, the committee feel it due to the holders of securities that they should be fully informed as to the gross and net earnings, and it is promised by the Receiver that henceforth these results will be regularly furnished. The actual gross and net earnings for the month of October have just been received, and are as follows:

The actual gross earnings from Jan. 1 to Oct. 31 have been \$4,756,797. The estimated earnings for November are \$705,974. It is proper to state that the last three months of the year, October. November and December, are much better than average months, so far as gross and net earnings are concerned, these months covering the greater part of the cotton movement.

The obligatory interest charge under the plan of reorganization will be about \$1,287,000, and taxes \$130,000, following which is the charge under the second mortgage for \$25,000,000, which bears interest up to 5 per cent., but is dependent upon income and non-cumulative.

While the committee cannot fix an exact date for the issue of the new securities no time is being lost, and they expect to deliver the same during the coming spring.

Tobique, Gypsum & Colonization.—This company has applied for a charter in Canada for the purpose of building a road from a point on the New Brunswick at Perth Centre, up the St. John and Tobique rivers, to a connection with the proposed Restigouche & Victoria Colonization road, at or near Nictaux Lake.

Toledo, Peoria & Western.—The Illinois Railroad Commission has submitted its report to Gov. Oglesby in regard to the Chatsworth disaster. It states that there is no evidence to show that the burning was the work of an incendiary, and holds that the railroad company is censurable for neglect in failing to inspect the condition of the track and bridges in advance of the train.

Tucson, Globe & Northern.—The contract has been et to build the road from Tucson, Ariz., to a connection with the Atlantic & Pacific road near the New Mexican

Union Pacific.—The Cheyenne & Northern is to be extended 150 miles north of its present terminus at the mouth of Cottonwood Creek, over the North Platte River, 30 miles southeast of Douglass, Wyo., to Buffalo.

A Washington dispatch states that the company will be re-

quired to give up 200,000 acres of land near to Denver, Col., it having been decided that the lands in question he outside the railroad grant.

Wabash.—Judge Gresham has directed Receiver Mc-Nulta to defer the payment of coupons on several of the divisions that he had intended to make on Jan. 1. Some time ago formal orders were issued in the different foreclosure suits directing the Receiver to pay coupons on bonds of the different divisions as those divisions should show sufficient earnings for the purpose. Most of the parties interested in the suits have represented to Judge Gresham that such payments were not desirable unless they embraced all divisions, and accordingly he gave the order that they should be deferred until more consideration could be given to the matter.

Wilmington & Northern.—The United States Express Co. has taken possession of the express business over this road, succeeding the Adams Express Co.

Winona & Southwestern.—C. F. Hatch, represent a Chicago syndicate, has concluded negotiations to build road from Winona, Minn., to Omaha, Neb., by Jan. 1, 18

Zanesville & Ohio,—The road has been completed, and is in operation to Waterford, about 25 miles from Parkersburg, W. Va.

TRAFFIC AND EARNINGS

Western Railway Club.

The next meeting of this Club will be held in the Grand Pacific Hotel, Chicago, Dec. 21. The subjects for considera-tion are:

Pacific Hotel, Chicago, Dec. 21. The subjects for consideration are:

1st. "Car Heating by Steam." A paper on this subject will be read by Mr. W. A. Smith, of the Railway Review.

2d. "Specifications for Cast-Iron Wheels, and their Wear Compared with Steel-tired Wheels." To be introduced by Mr. J. N. Barr, of the Chicago, Milwaukee & St. Paul.

3d. Report of Committee on "Axle for 60,000-lb. Car," by Mr. B. K. Verbryck, of the Chicago, Rock Island & Pacific.

Weighing in the Chicago Stock Yards.

The Western lines entering Chicago have, after three months' work, put in a complete plant of 50-ton scales at the stock yards, and will, on Dec. 19, begin weighing all live stock brought to the city, and charging for transportation by actual instead of estimated weights, as has been the practice here-tofore.

Blockade on the Transcontinental Roads.

Blockade on the Transcontinental Roads.
The unprecedented rush of both passenger and freight traffic toward the Pacific Coast continues unabated, if we may judge from the newspaper reports. The delays to freight on the Atlantic & Pacific, noted recently, are said to be owing to the necessity of using all the engines for hauling west-bound passenger trains, which are crowded with passengers; and now there comes a report that freight is held over by the hundred carloads on the Ogden-San Francisco line of the Southern Pacific for a similar cause

Dressed Beef Rates.

Dressed Beef Rates.

The presidents of the trunk lines, all of which, including the Grand Trunk, were represented, held a meeting in New York on Tuesday of this week, and resolved to advance the rates Dec. 26, on dressed beef, live stock, etc., to the tariff of a month ago (65 cents, Chicago to New York, on dressed beef). The Grand Trunk claims the right to carry at 10 per cent. less than is charged by the American lines, and the latter seems to have ommitted the principle, but whether the differential is to be 10 per cent., or more or less than that, seems to be still under discussion. The reports say that it will be arbitrated by Messis. Fink and Blanchard if the presidents fail to agree.

Cotton.

The cotton movement for the week ending Dec. 9 is reported

as below, in bailes :					
Interior markets:	1887.	1886.	Inc	or Dec.	P. 0
Receipts	159,481	144.920	I.	14.561	10.
Shipments		133 667	I.	11,693	8.
Stock	463,323	402,085	I.	61,238	15.
Seaports:		4			
Receipts	249.019	227,886	I.	21,133	9.
Exports		190.881	D.	39,709	20.
Stock		1,006,364	D.	40.889	4.

Coal.

The coal shipments for the week ending Dec. 10 are reported as follows:

as lonows.	1887.	1886.	In	crease		P. c.
Anthracite		669,407		80,76		12.0
Bituminous		267,551	-			26.4
The coal tonnages ending Dec. 3 are rep			roa	d for	the	week

 Line of road
 Coal. 203,449
 Coke. 90,937
 Total. 294,389

 Year to Dec 3
 9,486,697
 3,396,170
 12,882,867

 To Dec, 4, 1886
 7,983,243
 3,259,139
 11,2
 2,382
 Cumberland coal shipments for the week ending Dec. 10 mounted to 83,807 tons and for the year to that date 3,143, amounted 831 tons.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

Month of October	:				
	1887.	1886.	Inc.	or Dec.	P.c.
Bur., C. R. & No.	319,668	316 204	I.	3.464	1.0
Net	101,830	119.906	D.	18,076	15.0
Ches., O. & S.W	222,728	181,437	I.	41,291	23 7
Net	116,011	84.123	I.	31,888	37 9
Den. & R. Gran	797,565	703,260	I.	94,305	13.4
Net	356,347	298,904	I.	57,443	19.2
Ft. W. & Den. C .	85,296	61,859	I.	23,437	37.8
Net	39,418	37,197	I.	2,221	5.8
L., N. O. & Tex	264.813	197,372	I.	67 441	34.1
Net	116,013	85,705	I.	30,308	36 €
Mexican Central	444,216	346,053	I.	98,163	28 3
Net	178,210	149,036	I.	29,174	19.5
Minn. & N. W	204,049	59.973	I.	144.076	73.6
Net	63,172	23,555	I.	39,617	167.8
New Brunswick	86,974	84.945	I.	2,029	23
Net	40.698	39,689	I.	1.009	2.7
Rome, Wat. & Og.	315 991	299,343	I.	16,648	5.5
Net	163,748	159,608	I.	4,140	2.6
South. Pac. Co.:					
Gal., H. & S. A.	355,540	220,236	T.	135,304	61.4
Net	132,420	16,606	I.	15.814	95.2
Louisia. & West	81,198	52.011	I.	29,187	56.1
Net	46,136	25,793	1.	20,343	78.8
Mor. L. & T	554,115	298,345	I.	155,770	39.1
Net	239,618	91,749	I.	47.869	52.9
N. Y., T. & M	16.633	17 729	D.	1.096	6.1
Net	4,019	4,001	I.	18	0.4
Texas & N. O	122,125	86,785	I.	35,340	40.7
Not	50 348	96 919	1	09 199	69 0

Month of Novemb	er:	1998 Inc	on Doo Bo
At antic & Pac	1887. 233,835	183,644 I.	or Dec. P c. 50,191 27.3
Buff., N. Y. & P., Bur., C. R. & No.	230,700	204,336 I. 290,670 I.	26,364 12.9 8,552 2.9
California South .	299,222 126,905	86,258 I.	40,647 47.0
Canadian Pac	1.267,000 591,179	1,073,286 I. 587,404 I.	193,714 18.0 3,775 .6
Central of Ga Central of Iowa	591,179 139,897 412,123	123,845 I.	10,052 12.9
Chrs. & Ohio Eliz., Lex.&B S.	1414.37.3	358,551 I. P9,858 I.	53,572 14.6 9,715 10.8
	205,777	178.983 I.	26,794 149
Chi. & Atlantic Chi. & East. II Chi. & Ind. Coal . Chi. Mil. & St. P. Chi., St. P& K. C Chi. & W. Mich	205,777 192,816 200,338	155,311 I. 164,339 I.	37,505 24.1 35,999 21.3
Chi. & Ind. Coal .	50.171		26,694 113.5
Chi., St. P& K. C.	2,641,000 31,354 1,9,746	2,469,313 I. 20,549 I. 112 801 I. 282,584 I. 1:1 878 I.	171,687 6.9 10,805 52.7
Chi. & W. Mich	1.9,746	112 801 I.	6 945 6.1 51,532 12.3
Cin, N. O. & T. P. Ala. Gt. South N. Orl. & N. E Vicks. & Mer	334.116 165,106	282,584 I. 1:1.878 I.	33,228 25.1
N. Orl. & N. E.	81,851	82,047 D. 59,384 I.	196 .2 4,321 7.2
	81,851 63,705 89,109	65,499 I.	23,610 36.0
Total, C., N. O. & T. P	723,887	611,392 I.	112,495 1.8
Cio., R. & Ft. W	36,278	33,926 I.	2,352 6.9
Cio., K. & Ft. W. Cin & Sprigfield Cin., W. & Balt Cleve., Ak. & C. Cl., C., C. & I. Cleve. & Marietta Col. & Cin. Mid Col. H. Vy. & Tol. Denver & R. G. d. Det. Lau. & No.	101,135 205,212	96,967 I. 187,079 I.	4;168 4.2 18,133 9.6
Cleve., Ak. & C	205,212 44,600	40,281 I.	4,319 10.7
Cleve. & Marietta	396,675 27,514	23.388 L	4.120 18.0
Col. & Cin. Mid	27,514 31,511	28,154 I.	3,357 11.9 9,315 3.8
Denver & R. G.d.	250,668 749,428	241,353 L 648,907 L	100.521 15.4
Det., Lan. & No. Det., M. & Marq. E. Ten., Va. & G.	97,419 46,824	101,690 D. 32,334 I. 418,342 I. 18,193 I.	4,280 4.2 13 490 41.7 76,224 18.2 1,124 6.3
E. Ten., Va. & G.	491,566 19.317	418,342 I.	76,224 18.2
Ev. & Indianapons. Ev. & Ferre H	19,317	18,193 I. 59,056 I	1,124 6.3 8,076 14.8
Flint & P. M	67,132 215,510 109,777 70,154	177,816 I.	37,694 21.2 16 625 17.8
Flint & P. M Fla. Ry. & N. Co Ft. W. & Den. Co.	70.154	93,152 I. 52,476 I.	17.678 33.6
		96,174 I.	27,984 20.0
Gr. Rapids & Ind. Ill. Cen. (Ill. Div.)	195,933 649,300	576,210 I.	14,177 6.7 73,090 12.6
ind., Bloom. & W.	519,500 218,048	462,389 I. 227,369 D.	57,111 12·3 9,321 4.0
Ind., Dec. & Spr., K. C., Ft. S. & G.	33,298 223,615	42,511 D.	9,213 21.6
K. C., Ft. S. & G K. C., Sp. & Mem.	223,615 174,713	225,492 D. 159,288 L	1,877 0.8 15,425 9 6
Kingston & Pem	13,139	11,950 1.	1,189 9.8
Lehigh & H. R Long Island	14,403 235,977	20,369 D. 217,090 I.	5,966 29.2 18,887 8.6
Louis & Nash	86,353 1,484,345		14,428 29 0 202,348 15.7
Louis. & Nash Louis., N. A. & C Lou., N. O. & T	182,513	168,379 I.	14.134 8.3
Mar., Col. & Nor.	182,513 288,727 7,244	218,449 L 2,989 L	70,278 32.1 4,255 14.1
Ma q., H. & O Memphis & Chas.	69 947	66,994 1.	2.953 4.4
Memphis & Chas.	191,035 458,800	175,407 I. 379,902 I.	15,678 8.9 78,898 20.7
Mexican Cen Mil., L. S. & W. Minn. & N. W Mobile & Ohio.	220,207	204.799 1.	15,408 7.5 105,806 142.4
Mobile & Ohio .	180,105 $271,281$	251,781 I.	16,500 6.4
N. Y. C. & H. R.	271,281 3,256,304 133,125	2,885,832 I. 108,548 I.	379,472 12.8 24,577 22.6
N. Y. C. & H. R. N. Y., Oot, & W., Norfolk & West	389,634	322.059 1.	66,975 20.7
Ohio & Miss Ohio River	340,902	325,654 I. 18,118 I.	15,248 4.6 21,023 1.6.1
Ohio Southorn	39,141 60,153	59,983 1.	171 .2
Oreg. R. & N. Co. Peoria, Dec. & E. Pitts. & West. Rich. & Danville. Va. Mid. Div. Chas., C. & A.	613 488 64,769	518,000 I. 64,129 I.	640 0.9
Pitts. & West	165,499 465,860	64,129 I. 151,337 I. 421,974 I.	14,162 93 43,826 10.3
Va. Mid. Div	138,500	129,600 1.	8,900 68
Chas., C. & A.	91,600	86,161 I. 68,050 D.	6,439 7.5 3,650 5.3
Col. & Gr. Div. West. N. C. Div. Wa , O. & W.	64,460 56,000	48 277 I.	7,723 15 9
Ash. &Sp (M.L.)		8,600 L. 4,100 L.	2,300 36.7 4,900 119.5
*St. L., A. & T. H.	198,263 90,63 Q	173,223 1.	24,040 13 8 10,190 12.6
St. L. A. & T	331 390	208.583 I.	122,807 5.8
	660.879	459,748 I. 147,349 I. 810,514 I.	201,131 43.7 26,924 18 2
St. P. & Duluth St. P., M. & Man	174,273 1,169,843	810,514 I.	359,329 44.3
San A. & Aran.P Shenandoah Val	75,919 81,000	23.184 I. 71.053 I.	52 735 227.2 12.947 18.2
Stat. Isl. Rap. T Texas & Pacific.	51,500 765,974	00,180 1.	1,315 26.1
Tol. & Ohio C	109,176	84 G71 I	51,463 - 7.2 24,505 28.9
Tol., Peor & West .	92,749	71,449 I.	21,100 29.5
Wabash (West) Wheeling & L. E.	530,020 64,303	474,819 I. 51,244 I.	13.061 25 5
Wisconsin Cen	199,593	154,570 I. 34,349 I.	45,023 29.1 21,052 61.5
Chi., W. & M M., St. C. & W., Wis. & Minn	41,851	33,482 1.	21,052 61.5 8,369 24 9
Wis. & Minn	28,007	19,685 I. 23,374,344 l.	8,322 42.2 3,618,619 15.4
10tal	20,000 1,000	adio. House at	

*Including Ind. & St. L.

1	Ten months-Jan	. 1 to Oct. 31:				
ì	Bur., C. R. & No	2 400,998	2,335,860	I.	65,138	2.7
. 1	Net	555,761	605,923	D.	50,162	9.2
ı	Ches., O. & F. W.	1,589,405	1,367,467	I.	221,934	162
	Net	660,714	501,807	I.	158,907	31 6
П	Den. & R. G	6,518,858	5,453,957	I.	1,064,901	19.7
1	Net	2,703,395	1,996,981	I.	706,414	35.4
1	Ft. Worth & D. C.	571,208	346.754	I.	224,454	64.7
1	Net	242,417	150,711	1.	91,706	60.8
1	Lou. N. O. & Tex	1,616,600	1,219,905	I.	326,695	25.3
	Net	4.28.67M	306,306	I.	122,372	49.9
	Mexican Central.	3,878.435	3,036,824	L.	≥41,611	21.4
	Net	1,676,596	993,173	I.	683,423	68 8
1	Minn. & North. W.	1,174,201	388,255	I.	786 646	202.5
- 1	Net	354,310	148 513	I.	205,797	138.5
1	New Brunswick	677,102	674,202	I.	2.900	0.4
1	Net	0.000	0.000 004		040 100	99.5
1	Rome, W. & O	2,672,196	2,395,774	Į.	276,422	11.5 13.5
1	Net	1,192,088	1,050,123	I.	141,965	10.0
1	South Pac. Co.:	2,741,098	2,140,818	I.	600,280	28.0
1	Gal., H. & S. A.	512,757	256,715	î.	256,042	99.7
	Net Louisia, & West	689,034	521,268	i.	167.766	32.1
21		334.185	262,751	î.	71,434	27.1
1	Net	3,508,943	3.297,362	i.	211.581	6.4
	Morgan's&L. T.		711,857	1.	95.831	13.4
1	Net	807,688	128,989	i.	12,844	9.9
	N. Y., Tex.&Mex	141,833 17,373	4.577	I.	12,796	78.1
	Texas & N. O	17,373	801.097	î.	238,949	29.8
5		1,040,046	338,520	I.	145.352	42.7
*	Net	8,121,034	6,889,535	I.	1,231,499	17.8
П			1,575,418	î.	581,458	36 5
5	Net	2,156,876	660,256	I.	203,463	30.8
5	To'. & O. Cent	863,719 279,757	194,529	I.	85,228	43 8
1	Net	210,101	104,028	A.	50,520	400
	Total (gross),	29,407,354	24,164,587	I.	5,242,767	21.6
3	Total (net)	9,250,592	6,523,484	1.	2,727,108	41.8

Early reports of monthly earnings are usually estimated in part, and are subject to correction by later statements.

Illinois Rates.

Lively discussions between the Wabash, Wabash Western, Chicago, Burlington & Quincy, Chicago & Alton, Missouri Pacific and other roads continues concerning the reduction in local freight rates which has been announced as to go into effect Dec. 20. Receiver McNulta, of the Wabash, has determined to reduce the local rates to correspond with the basis on which through rates from the East are made. The other roa's between Chicago and the Mississippi River, in reducing their local rates to meet this reduction, announce that they shall also make reductions in the rates to points on and beyond the Mississippi River. This will lead to general reductions over a large territory, which will seriously impair the revenue of a large number of roads.

ANNUAL REPORTS.

Boston & Maine.

This company reports for the year ending Sept. 30, 1887. The mileage operated was over 609 miles, of which 124 miles is owned and 485 miles leased.

The equipment owned included 109 locomotives, 241 passenger cars and 2,093 freight and service cars; leased 131 locomotives, 253 passenger cars and 2,540 freight and service cars. vice cars.

The condensed balance sheet was as follows:

Assets:	
Construction and equipment	810 929,118
Investments	
Cash accounts and material	2,078,481
Improvement acts. betterments, etc	2,163,306

																\$16
Capital stock																\$7,000,000
Bonded debt																 5.000,000
Accounts payable																
Improvement act	f	u	ne	1	 	0	a					0				111,464
Surplus						 				0	0	 	 0	0		. 1,799,001

1887.	1886	In		P. c.
Passenger \$4.374.581	\$4,040,286	Ι.	334,295	8.2
Freight 3,207,062	2,929.766	1.	277,296	9 1
Mail, express, etc. 310,989	283,830	I.	27,159	9.5
Rents, etc 299,750	289,809	1.	9,941	3 4
Gross earnings 8,192,382	7,543,690	I.	648,69 ?	8.8
Exps. (less taxes) 4,946,596	4 542,597	I.	403,999	8.8
Net earnings 3,245,786	3,001,093	I.	244.693	8.1
Gross earn per m. 13,435	12,917	I.	518	4.0
Net " 5,329	5.310	1.	19	0.5
Per cent. of exps 60.3 Net earnings (less	60.2	I.	0.1	
taxes)	2,741,898	1.	106,808	4.6
The income account, conde	ensed, was as	foll	ows:	

\$26,848,706 \$260,809 1.451,075 438,000 700.000 1,022 Interest. Rentals leased lines . To pay Eastern R. R. as per lease . Dividends (10 per cent .) Balance to improv. act

The expenses were divided as follows:

1887.	1886,	In	c. or Dec.	P. c.
General, office and property, \$171,16	4 \$162,541	II.	\$8,623	5.3
" transportation 446,46	6 363,19	II.	83,275	22.9
Passenger " 623,94	7 557,258	3 I.	66,694	11.9
Freight " 724,75	7 651,843	3 I.	72,914	11.1
Motive power 1,290,58	5 1,224,51	5 I.	66.080	5.3
Maintenance cars 527,91		8 I.		
" way, etc1,086.90				2.7
Taxes 397,08				
Interest imp. bonds 52,34				51.7
Sinking fund imp. bonds 22,50	0 13,89	0 I.	8,610	61.9
\$5,343,67	7 \$4,801,79	4 1.	\$541,883	11.2
*** *** * * * * * * * * * * * * * * * *				

Trame statistics	are as iono	WS:		
	1887.	1886.	Inc. or Dec.	P. c.
Engine miles	6.064,400	5,597,492	I. 466,908	8.3
Pass. train miles	3,330,535	3,084,970	I. 245.565	7.3
Freight "	1,652,188	1,507.212	I. 144,976	9.6
Passengers carried.		17.022,581	I. 1,346,226	7.8
	39,707,344	224,223,291		6.8
	3.05 miles	13.17	D12	.9
" rate per				
mile	1.825 c.	1.802 c.	I. 0.23	1.2
Tons freight car	2.950.787	2,703,201		8.8
" one mile1	44,666,880	129,125 871	I. 15,541 089	12.0
Average haul		47.77 miles	I. 1.28	2.6
Rate per ton mile	2.217 c.	2.269 c.	D. 0.52	2.2

The cost per mile run for locomotives was 18.74 cohe miles run per ton of coal were 44.23, per pint of

17.33.

Much has been done in retuilding and strengthening bridges. One hundred and four sets of Westinghouse automatic brakes have been substituted for the vacuum formerly used on the Western Division.

The President makes the following comment on the relations of the road to the New Hampshire corporations and lines:

matic prakes have been substituted for the vacuum formerly used on the Western Division.

The President makes the following comment on the relations of the road to the New Hampshire corporations and lines:

At the special meeting of stockholders, held June 22 last, at which a lease by this company of the road and property of the Boston & Lowell was approved the stockholders also approved a lease of the road and property of the Manchester & Lawrence, subject to ratification by the Legislature has now authorized the lease, and the Manchester & Lawrence road is to-day a part of the Boston & Maine system. The lease of the Northern Railroad to the Boston & Lowell having been judicially annulled, the New Hampshire Legislature was applied to at its last session for such legislation enable a lease by the Northern Railroad to be legally consum mated. The legislation desired, though acted on favorably by both the Senate and House of Representatives, ultimately failed. The result, though unexpected, will not, it is believed, have any serious effect upon the integrity of the railroad as will result in its continued operation as a part of that system. And, though suit has been brought by the Boston, Concord & Montreal for an abrogation of its lease to the Boston & Lowell, the grounds of the decision in the case of the Northern Railroad do not exist in the case of the Boston, Concord & Montreal, while there are no others, it is believed, upon which the Boston, Concord & Montreal lease can be legitimately set aside.

The New Hampshire Legislature, at its last session, also passed an act authorizing this company to consolidate with the Eastern Railroad and the Eastern Railroad in New Hampshire by purchase of the respective roads and franchises of those companies. Similar legislation had previously been obtained in the state of Maine. If legislation of the same character is procured in Massachusetts passed last winter an act popularly known as the "Union Station Act," by which this company, in the event of its leasing the franc

Connecticut River.

The company reports for the fiscal year ending Sept. 80, 1887. It owns a line from Springfield, Mass., to South Vermore & Ohio Express Co., at a rental of 40 per cent. of the

non, Vt., 50 miles, and 5.85 miles of branches; it also leases the Ashuelot road, 24 miles, making 79.85 miles worked. The report is for the year ending Sept. 30. The earnings and expenses were as follows:

Freight Passenger Mail and express	413,377	1886. \$465,517 384,428 29,398	Inc. or Dec. I. \$29.636 I. 28,949 I. 814	P.c. 6.3 7.5 2.7
Total	\$939,749 710,435	\$879,344 644,588	I. \$59,398 I. 65,847	6.7 10.2
Net earnings Gross earn, per mile Net """ P.c. expenses to earn.		\$234,756 11,012 2,940 73.3	D. \$5,449 L. 757 D. 68 L. 2.3	2.3 6.8 2.3
The average passen	ger journey	was 10.1	7 miles last	year

The average passenger journey was 10.17 miles last year and 10.88 the year before; the average haul per ton of freight was 23.42 miles, against 24.66 miles the previous year.

The engine mileage was 634.573 miles.

The number of passengers carried was 1,681,822, and the number carried one mile was 17,090,776. There were 726,163 tons of freight moved, and 19,009,023 tons carried one mile.

one mile.

The average receipts were 2.42 cents per passenger mile, and 2.92 cents per ton mile.

The result for the year was as follows: N tearnings as above \$220, Interest received 16, Rents and miscellaneous 16, 16,865 16,601 Rentals and interest 43.173 Dividends, 8 per cent 189,600 232,773 \$30,000 987,987

 Surplus for the year
 \$30,000

 Total surplus Sept. 30, 1887
 987,987

 The general balance sheet is as follows:
 2,370,000

 Capital stock
 \$2,370,000

 Notes and accounts payable
 744,552

 Profit and loss, surplus
 987,987
 \$4,102,539

 Construction and equipment
 \$3,301,474

 Materials
 100,857

 Accounts and notes receivable
 576,360

 Investments
 99,610

 Cash
 24,238

\$4,102,539

Concerning the lease of the Ashuelot road the report says: At a meeting of the board, held in July, 1886, it was Resolved, That in the opinion of this Board, the time had arrived for the execution of the lease, for which provision was made in the contract executed on the 17th day of April, 1877, between the Ashuelot Railroad Co. and the Connecticut River Railroad Co., and the President is directed to take the necessary steps for the completion and execution of said lease. A lease was drafted in accordance with the terms and conditions of said contract, which was approved and accepted by the directors of the Ashuelot Railroad Co., and was duly ratified, without dissent, by the stockholders of that company, and executed by its President, A. B. Harris, Esq. On the 14th day of June, 1887, at a meeting of the Board, it was

the 14th day of June, 1887, at a meeting of the Board, it was Voted, "That N. A. Leonard, the President, be authorized and requested to sign the name and affix the seal of this company to the draft of the lease of the Ashuelot Railroad to the Connecticut River Railroad Co., for the period of 99 years from the 17th day of April, 1877, and duly executed by the Ashuelot Railroad Co."

This lease was executed by the President on the 14th day of June, 1887, and from that time the Connecticut River Railroad Co. has been in possession of and operated the Ashuelot Railroad, as its lessees.

Richmond & Alleghany.

The report of the Receiver covers the fiscal year ending Sept. 30, 1887. This company owns 252 miles of road and operated 257. The company owns also certain water-powers, the Richmond docks, the Rivanna Canal, 5 miles; the Indian Rock tramway, 2½ miles, and operated 15 miles of torries.

terries.
The equipment is 22 locomotives, 16 passenger and 3 sleeping cars and 814 cars of all other classes.
The condensed balance sheet is as follows:

Road and equipment	
Road and equipment	\$13,349,815
Richmond docks	1,000,876
Manchester water power	
neal estate	
Stocks and bonds	234,800
Material, accounts and cash	157.403
Rivanna Canal	
Discount, mortgage bonds and stock	563,383
	\$15,673,208

	\$15,673,208
Liabilities.	#10,010,000
Capital stock	\$5,000,000
Bonded dept	9,089,000
James River & Kanawha Co.'s lines	34,034
Alleghany Car Trust	376,000
Receiver's certificates	618,717
Bruno Bluff bridge bonds	7,000
Bills and accounts payable	185,422
Profit and loss	363,035
	\$15,673,208

The Receiver's certificates outstanding were increases \$125,000; \$100,685 was expended in construction and \$31,

\$120,000; \$100,000 417 in equipment. The earnings for the year were as follows:

	1001.	1990.	1.0	c. or dec.	L.C.
Freight		\$353,536	I.	23,590	6.6
Passenger	145,428	142.031	I.	3,397	2.3
Mail, express, etc	37,786	41,006	D.	3,220	7.8
Rents and water power	34,180	36.760	D.	2,580	7.0
Richmond docks	21,330	23,715	D.		10.0
Femanas	\$615,850 457,954	\$597,048 438,350	I.	18,802 19,604	3.1
Expenses	407,00%	400,000	A.	10,002	3.3
Net earnings	\$157,896	\$158,698	D.	802	1.5
The railroad earnings w	ere as fol	lows:			
	1887.	1886.	In	c. or dec.	P.c.
Gross earnings	\$566,164	\$542,701	I.	23,463	4.3
Expenses		409,512			5.9
Net earnings	\$132,128	\$133,189	D.	1,061	0.7
Gress earn, per mile	2,204	2,112	1.	92	4.3
Net " "	514	518	D.	4	
Per cent. of expenses		: 77.3	D.	7	

The expenses were divided as follows: 48,719 I. 9,044 18.5 139,318 I. 19,692 14.1 29,738 D. 861 3.1 52,280 D. 7,352 14.6

\$457,954 \$438,350 I. \$19,604 4.4

gross receipts. The gross receipts from that business therefore are less than in 1886, but there was a gain of \$2,438 in the net receipts.

Condensed income account:

Net earnings as above	 	\$157,896
Receivership expenses	 5	14,000
Real estate expenses		
Rentals		
Taxes		
Interest and discount		
Foreclesure fees and costs	 	5,006
Removing dams		3,178
Profit and loss	 	41,794

Some traffic statistics are as follows:

Tops freight	East. 280,428	P.c. 71.4	West. 111,511	P.c. 28 6	Total. 391.939
Ton miles 26	,705,075	73.8	9,492,470	26.2	36,167,454
Rate per ton mi	0.947		1.310		1,042
Average haul,			erage train	load,	160.7 tons;

Passengers East. 55,172
Pass. mile 1,945,680
Ayaraga Ayaraga 58,335 1,961,300

Rate per pass. mile. 3.20 cents.

Average passenger journey, 37.3 miles; average train load, 21 passengers.

Of the whole passenger traffic 49 per cent. was second class. There were also 289,654 passenger-miles on commutation and mileage tickets at an average rate of 2.19 cents per mile, and 1,794,549 passenger miles of excursion travel at the average rate of 0.78 cent per mile. The average for all classes was 2.43 cents.

Some of the principal items of freight carried were as follows:

																																		Carrie
Coal																																		. 32,
Coai.					0 .	0 1			۰	۰			0	о.		*	٥	0 0	 0	0	0 1		. 1				0	۰	۰	0 1	0 0	0 0	 0	. 04.
Stone	e an	1	H	E	n	e	8	14	Ol	a	е,												0		0			۰	0	0 1	,			. 46,
Pig i	ron.											į.												٠								,		24.3
Corn																						 				 								. 20,
																																		. 15.0
																																		. 11.
Toba	eco.											 								9		 			۰				۰					. 8,
Sums	BC .																																	. 1,

The number of vessels arriving at the Richmond docks and the revenue therefrom are constantly decreasing, and the Receivers anticipate nothing else for the future They make no recommendation, however, on the subject.

Hartford & Connecticut Western.

The company owns a line from Hartford, Conn., to Rhine-cliffe, N. Y., 108.3 miles.

The equipment, Sept. 30, 1887, included 18 iocomotives, 24 passenger and baggage cars, and 502 freight and other cars.

cars.

The earnings and expenses for the year were as follows:
 Farnings
 1887.
 1886.
 Inc. or Dec.
 P.c.

 Expenses
 241,688
 247,689
 D. 5,981
 2.4

Net earnings......\$108,796 \$101,298 I. \$7,500 7.4 The result of the year was as follows: Net earnings, as above \$180,796 Old acc unts collected 1,250

\$110,046 Taxes, etc. \$12.445 Interest. 30 502 \$67,099 Net profit

The general account is as follows : Capital stock Bonds. Miscellaneous. Profit and loss. \$2,600,900 729,100 33,090 43,801 \$3,406,981

Construction and equipment.....\$3,146.05 Materials. Real estate Accounts and bills receivable......... Cash...... \$3,406,981

Naugatuck.

The company owns a line from Stratford Junction, Conn., to Winsted, 56.55 miles, and 4.61 miles leased; it also uses the N. Y., N. H. & H. track junction to Bridgeport, 61.5 miles; a total of 66.16 miles operated. The report is for the year ending Sept. 30. The earnings and expenses for the year were as follows:

Gross earnings Expenses			1886. \$704.336 482,813	Inc. I. D.	or Dec. \$21,492 3,659	P. c. 3.0 0.7
Net earnings Gross earn, per mile	11,898 4,044	,	\$221,513 11,547 3,632 68.5	I. I. I. D.	\$25,151 351 412 2 5	11.3 2.9 11.4
The result of the ye	ear was a	s f	ollows:			

| \$246 064 | \$246 064 | \$100 | \$246 064 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$1 43,168 420,393

 Capital stock
 \$2,000,000

 Funded debt
 150,000

 Accounts and Liabilities
 94,327

 Profit and loss
 463,581

Road and property	\$2,423,284
Stocks and boods	12,600
Materials	60,740
Accounts receivable	111,512
Cash	1(9,752

\$2,707,888

The report says: Since your last annual meeting, the rights, franchises and property of your company have been leased to the New York, New Haven & Hartford Railroad Co. for the term of 99 years from the 1st of April, 1887. By the terms of the lease the dividends upon the stock and interest upon the bonds of this company will hereafter be paid by the New York, New Haven & Hartford Railroad Co. directly to the stockholders. The amount of rent to be paid under the lease will yield the stockholders of this company the same dividends which they have received for years past, viz., 10 per cent. per annum on the capital stock of \$2,000,000. The lease has been ratified by an almost unanmous vote of the stockholders, and is deemed by your directors to be an advantageous one, both to the lessor and the lessee.